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# Remarks on the recent publication of Titian R. Peale's "lost manuscript," including new information about Peale's Lepidoptera illustrations

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**Abstract.** The recent book *The Butterflies of North America: Titian Peale's Lost Manuscript* introduces over two hundred previously unpublished drawings of butterflies and moths by the naturalist-artist Titian Ramsay Peale. In many instances, this book provides inaccurate and insufficient information about Peale's illustrations and the specimens they portray. A number of species are misidentified and the nomenclature is sometimes outdated. A detailed analysis of these illustrations reveals that many of the depicted specimens still exist. It was also discovered that Peale copied over fifty of his larvae, pupae, and plants from at least ten published works. With the assistance of twelve other lepidopterists and botanists, the insects and plants portrayed in Peale's illustrations are re-identified. New information about Peale's abandoned work, *Lepidoptera Americana*, is also presented.

**Key words:** John Abbot, butterflies, larva, Mexico, moths, North America, plants, pupa, South America.

## Introduction

Titian Ramsay Peale II (1799-1885) (Fig. 1) was a talented artist and naturalist, whose family was enormously influential in the development of the arts in America. His father, artist-naturalist Charles Willson Peale (1741-1827), painted some of the most familiar portraits of the colonial period and founded one of the first museums in America. In addition to producing lithographs for his own publication, *Lepidoptera Americana* (Peale 1833), Titian R. Peale contributed illustrations for Thomas Say's *American Entomology* (1817, 1824-1828), Charles L. Bonaparte's *American Ornithology* (1825-1833), and John Cassin's *Mammalogy and Ornithology* (1858). Contrary to popular belief, he rendered only some of the plates for these publications. Until recently, these remained the most widely recognized examples of his artwork, though he also produced a few illustrations for other publications (e.g. James 1822; Bonaparte 1824; Green 1827; Doughty & Doughty 1830-1834). With the publication of *The Butterflies of North America: Titian Peale's Lost Manuscript* (Peale et al. 2015) we become familiar with over two hundred of Peale's previously unpublished Lepidoptera illustrations, reproduced from manuscripts in the rare book collection at the American Museum of Natural History (AMNH).

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## Peale's manuscript

As suggested by its title, the first part of Peale et al. (2015) highlights illustrations for Peale's proposed work, "The Butterflies of North America, Diurnal Lepidoptera: Whence They Come, Where They Go, What They Do." This manuscript, comprised of three volumes of drawings and over 400 pages of handwritten descriptive text, was donated to AMNH in 1916 by wealthy New York financier Ogden Mills (1856-1929) (Tower 1917), who served on the AMNH Board of Trustees and was a generous benefactor to the museum. (His son, Ogden L. Mills, served as Secretary to the Treasury of the United States). Evidence suggests that this manuscript was mostly completed between the years 1874 and 1880, after Peale had retired from the U.S. Patent Office in Washington, D.C. and moved back to the Philadelphia area.

Some of these illustrations were completed earlier, as he mentions in his text that he borrowed several specimens from the collection of the Entomological Society of Philadelphia, an organization that existed under that name from 1859 to 1867. While living in Washington, D.C., Peale occasionally made the trek to Philadelphia, particularly to visit his older brother, Benjamin Franklin Peale (Poesch 1961).

All of the illustrations from this manuscript are reproduced in Peale et al. (2015), but only 13 pages of the accompanying text are included. Although this manuscript is titled "Butterflies of North America," it incorporates several species of moths, and Peale's definition of North America is somewhat unconventional. He intended to limit himself "to the diurnal species," feeling that the time was insufficient to include both moths and butterflies, but found it "necessary to take them as they come to hand" (letter dated 19.ix.1875, Field Museum of Natural History, Chicago, Illinois; FMNH). Peale struggled with the definition of North America, asking the Pennsylvania lepidopterist F. H. Herman Strecker "What do you think of the limits of North America? – what is the limit South and Southeast?" (ibid.). In the introduction of his text Peale wrote, "[T]his subject cannot be divided by state lines, - there is nothing political in it, and so we must select some other stand point." He ultimately included the area from the Gulf of St. Lawrence southward to the West Indies, Mexico, and Central America, as well as northern South America. The accuracy of Peale's illustrations is, for the most part, extraordinary. Many of the depicted butterflies can be identified to subspecies, even without knowing their origin. The early stages are largely accurate, and those derived from other sources (see below) were enhanced by Peale to look more realistic. Some of the plants, however, are somewhat loosely portrayed and difficult to identify with certainty. Although the title of Peale et al. (2015) implies that the original manuscript was forgotten after Peale's death, at least nine of its illustrations were published or figured in other studies, and six pages were publicly exhibited prior to 2015 ([Skinner] 1892; Poesch 1961; Sellers 1980; Haifley 1981; Foutch 2011).

### *Lepidoptera Americana*

The second part of Peale et al. (2015) examines *Lepidoptera Americana* (Peale 1833), Peale's initial attempt to publish a treatise on North American butterflies and moths. Featured is Peale's personal copy, which was donated to AMNH in 1817 by Peale's nephew, John M. Hoffmire (1833-1919) (Tower 1918). Included with this copy is a double-sided sheet of "Proposals" for publishing the work, dated March 1833. Although Peale et al. (2015) reproduce ten lithographs for *Lepidoptera Americana*, only Plates 2, 3, 4, and 7 (with 14 pages of accompanying text) were actually included in the single published installment. *Lepidoptera Americana* is essentially a prospectus, and Peale himself referred to it as such (Foutch 2011). He issued the four plates and text as an example of what prospective subscribers could expect, but there is some disagreement about whether this work was actually published. However, Peale distributed colored copies to a number of "scientific friends" and donated colored and uncolored copies to "Scientific Libraries" (Peale 1884). These actions, as well as details of the piece itself, comply with Articles 8 and 9 of ICZN (1999, and amendments) as constituting a published work. After the first installment was published, Thomas Say attempted to persuade Peale to include descriptions of the early stages of each species, though he doubted that Peale would do so (13 August 1834, Museum of Comparative Zoology, Harvard University). At least nine additional plates were printed in expectation of continuing the series, six of which are included in Peale's copy at AMNH. Copies of these and three other trial plates (four dated 1836) were donated by Peale in 1884 to the Academy of Natural Sciences of Philadelphia (Pennsylvania; ANSP) ([Nolan] 1885). Although Peale enlisted 28 subscribers to *Lepidoptera Americana*, it was not enough to fund its publication. Peale most likely abandoned the project before the summer of 1838, when he left to participate in the United States Exploring Expedition (Wilkes Expedition).

Rhodes (2015) claims that only four copies of *Lepidoptera Americana* are known to exist, yet eight copies were listed by dos Passos (1965), two of which are preserved at AMNH (the second possibly being a combination of two copies that were reportedly sold to the University of Minnesota around 1942; see dos Passos 1965). Individual plates are also deposited in the American Philosophical Society Library (Philadelphia, Pennsylvania; APS). In addition, we confirmed the existence of a previously undocumented copy at the University of New South Wales (Sydney, Australia; UNSW). Bound in marbled boards and lacking a title page, it contains text and plates 2-8 (5, 6, and 8 were not published in the original installment). This copy evidently came to Australia via the entomologist William S. Macleay (1792-1865), whose signature appears on the verso of the front cover. Macleay probably received it directly from Peale, whom he met in Philadelphia in 1836 (Macleay 1838). Three years later, Macleay moved to Sydney, where he spent the remainder of his life. He remained in contact with Peale, even sending him specimens from Australia.

Of special interest, Macleay's copy of *Lepidoptera Americana* offers evidence that Peale later changed his mind about how this work would be issued. The printed "Proposals" sheet originally stated that it would be "issued in Numbers of four Plates" and that a number would be "regularly published every two months." The price of copies printed on "fine paper, with coloured plates," would be ten dollars per year, and would be payable "on the delivery of the first number" (dos Passos 1965; Foutch 2011). The "Proposals" page in the Macleay copy includes ink corrections by Peale, denoting that the book would be issued in entire volumes of 25 plates at a price of ten dollars each (Fig. 2). He did not, however, provide an indication of how often the volumes would appear. This new approach was probably proposed by Peale around the year 1836.

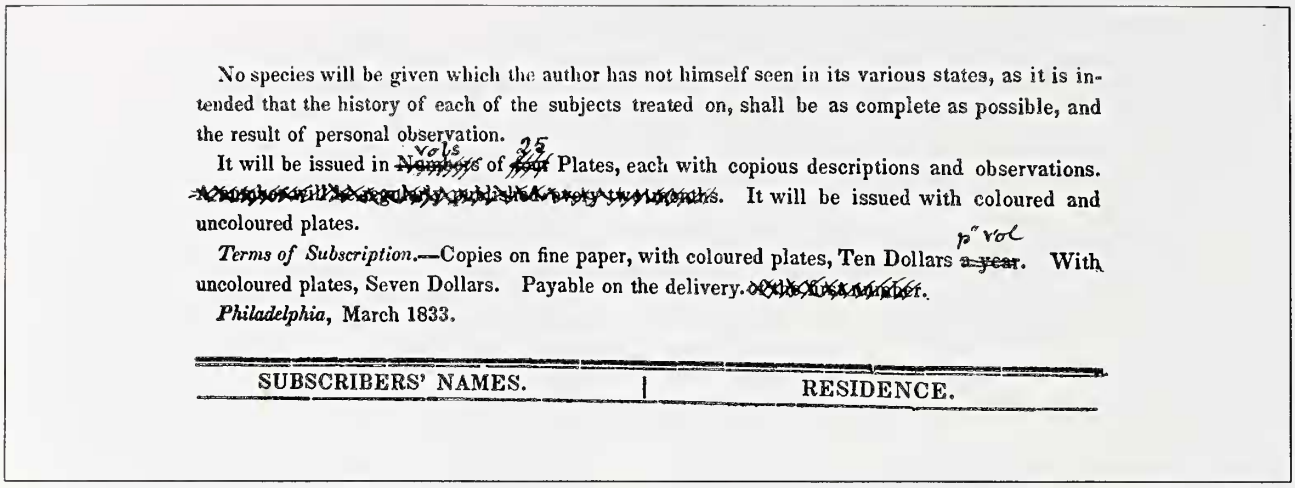
## Peale's sketchbook

The last part of Peale et al. (2015) presents an assortment of illustrations from Peale's sketchbook, "Lepidoptera. Larva. Food-plant, Pupa. &c.," which was acquired by AMNH in 1918 from Peale's nephew, J. M. Hoffmire (Dickerson 1918). This collection includes over 100 drawings, most of which are reproduced in Peale et al. (2015). Dates written on the drawings indicate that they were rendered during two discrete periods: 1833-1837 and 1873-1880. In the intervening years, Peale traveled with the Wilkes Expedition, wrote his ill-fated zoological volume for the expedition, operated (and lost) the family museum, and worked at the U.S. Patent Office. He also suffered the deaths of his wife and three of his children during this time. He complained that while serving as examiner of patents, he was unable to indulge in his beloved pastime for many years (letter dated 10,vii.1871, FMNH). One rendering of the life history of a *Morpho* butterfly [possibly *M. epistrophus* (Fabricius, 1796)] was drawn in Brazil in 1838, while Peale was traveling with the Wilkes Expedition. The accuracy of Peale's drawings of larvae varies greatly, with some being unidentifiable. This is not unexpected, as they were rendered during different periods in Peale's life. An editorial error, or perhaps to fill space, several of the thirty-two small reproductions on pages 244 and 245 of Peale et al. (2015) are duplicates of larger images on the preceding pages. Although it is stated in the caption for the drawing on page 240 that only two butterflies are portrayed among the caterpillar studies, eleven butterfly species are included among these drawings (including six on pgs. 244 and 245).


**Figure 1.** Titian R. Peale, c. 1875 (American Philosophical Society) (signature from 1826; J. Calhoun coll.).

## Analysis

We feel that Peale et al. (2015) understate the scientific merits of Peale's illustrations. An art historian, Haltman (2015) mostly explores the philosophical aspects of Peale's work in the book's introduction, perceiving that Peale "reworked the material reality of living specimens – motion to stillness, change (or metamorphosis) to stasis, weightlessness to gravity – into aesthetic fictions serving to document, sanitize, and even theorize the work of science," adding, "His later work would even, at times, invoke the possibility of a resurrection metaphysical in nature, beyond the pictorial resurrection he provided." In composing his Lepidoptera illustrations, Peale generally followed the artistic traditions of his predecessors. Adult butterflies and moths were typically depicted as specimens, suspended in space or sitting on leaves of the food plants on which the early stages are positioned. Peale was extremely creative, but he seemed more pragmatic when it came to illustrating his beloved Lepidoptera, fashioning arrangements that best enabled the identification of their subjects. The layout of larva, pupa, food plant, and adults of



No species will be given which the author has not himself seen in its various states, as it is intended that the history of each of the subjects treated on, shall be as complete as possible, and the result of personal observation.

It will be issued in ~~Numbers~~ Vols of ~~four~~ 25 Plates, each with copious descriptions and observations. ~~It will be regularly published every two months.~~ It will be issued with coloured and uncoloured plates.

*Terms of Subscription.*—Copies on fine paper, with coloured plates, Ten Dollars ~~a year~~ p^r vol. With uncoloured plates, Seven Dollars. Payable on the delivery of ~~the first number~~.

*Philadelphia*, March 1833.

| SUBSCRIBERS' NAMES. | RESIDENCE. |
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**Figure 2.** Verso of the "Proposals" sheet from the copy of *Lepidoptera Americana* in Australia (UNSW Library).

*Battus philenor* (Linnaeus, 1771) on Plate XVIII is a practical and appealing means to depict these figures within the limited space available. It was less likely composed, as interpreted by Haltman (2015), as a metaphor for metamorphosis, with a caterpillar crawling towards its own pupa, and then ultimately flying away as a butterfly at the top of the page. In fact, Peale's composition is likely an homage to the similar composition of this species by John Abbot on Plate III in Smith & Abbot (1797). Furthermore, Peale copied his larva and pupa for this illustration from figures on Plate 11 of Boisduval & Le Conte (1829-[1837]), which were based on Abbot's drawings (see below). While Peale was undeniably imaginative, he was bound by convention, resulting in compositions that were largely driven by convenience and scientific purpose.

The captions in Peale et al. (2015) are too brief and often include incorrect or insufficient information. Within the introduction it is stated that the portrait of Peale, dated "ca. 1850," portrays Peale "at about thirty years of age," but this would make him 51 years old. This portrait, done with the help of his brother, Rembrandt Peale, and preserved at AMNH, is believed to have been completed c. 1825-1835 (Poesch 1961). A contemporary brass plate affixed to the frame of this painting is the culprit, erroneously dating it as "ca. 1850." Among Peale's Lepidoptera illustrations, Plate XIX portrays two species, *Battus devilliers* (Godart, [1824]) and *Papilio oxynius* (Geyer [1827]), yet the caption mentions only *B. devilliers*. The caption for the subsequent plate mentions only *P. oxynius*, while two species are actually depicted, *Mimoides thymbraeus* (Boisduval, 1836) and *Battus polydamas* (Linnaeus, 1758). Plate XCVII portrays four different species – not two as indicated – and gives the range of *Anaea troglodyta* (Fabricius, 1775) as including Central America, where this species does not occur.

Fascinating details regarding some of the specimens that Peale portrayed were omitted from Peale et al. (2015). For example, the image of Plate XV received only the brief caption, "An apparent blue/dark variant of the Spicebush Swallowtail, *Papilio troilus* var." There is so much more to its story. In his text for this drawing, Peale noted that the depicted specimen was collected by a friend at Washington, D.C. in 1847. Peale was a correspondent of the Pennsylvania lepidopterist F. H. Herman Strecker, who learned about this aberrant specimen and cited it in Strecker (1878) as "One example in coll. Peale." Strecker was obsessed with aberrations or "monstrosities" and would attempt to acquire such specimens at practically any cost. Peale wrote in his collection notes at ANSP that the specimen of *Papilio troilus* Linnaeus, 1758 was ultimately sent to Strecker in June 1877 in exchange for a specimen of *Urania sloanus* (Cramer, 1776), a striking Jamaican moth that was extinct by the early 1900s. Strecker personally delivered the specimen to Peale in Philadelphia (card from Peale dated 27.v.1877, FMNH). Peale portrayed his prize *U. sloanus* on Plate CXXXVIII, and this specimen still exists in the ANSP collection. The specimen of *P. troilus* is deposited with Strecker's collection at the FMNH, and his handwritten collection catalog confirms that it was received from Peale. Strecker (1900) partially based his description of *P. troilus* var. *radiatus* on this specimen, which was attributed to "Washington, D.C., Titian R. Peale."

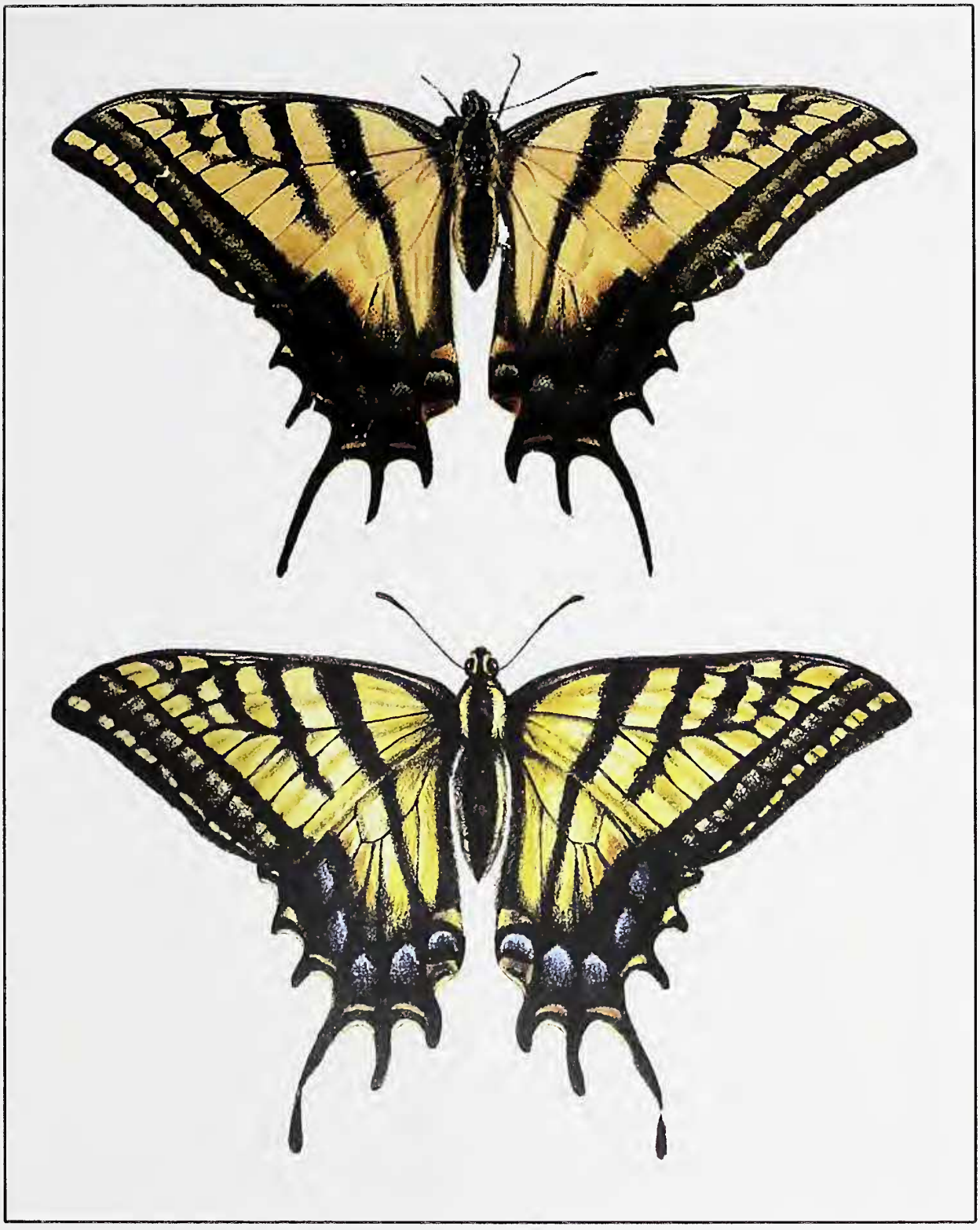

**Figure 3.** *Papilio multicaudata*. **Top**: specimen in Peale's collection at ANSP, collected at Guanajuato, Mexico, by John Millington and given to Peale in 1835. **Bottom**: hand-colored lithograph from Pl. III of Peale's manuscript, originally printed for *Lepidoptera Americana* (AMNH Library image b1083009_2).

Another remarkable account involves the name *Papilio multicaudata* W. F. Kirby, 1884, which Peale originally proposed for a large butterfly that he received in 1835 from John Millington (Fig. 3, top), a civil engineer who lived in Mexico for several years. Referring to the multiple tails on the hindwing of this species, Peale used the name *Papilio multicaudata* on a lithograph of Millington's specimen, which was printed in 1836 for the continuation of *Lepidoptera Americana* (Fig. 3, bottom). To create Plate III for his "Butterflies of North America," Peale simply clipped out the figures of this species from one of the previously printed plates. Because Peale never published his proposed name, he was "scooped" by the French entomologist Jean B. A. D. de Boisduval, who, based on another specimen from Mexico, scientifically described this species in 1836 as *Papilio daunus*. Consequently, Peale dutifully employed this name on his Plate III. The name *P. daunus*, however, had already been used for another species of butterfly, thereby invalidating Boisduval's name. In an incredible twist of fate, Peale's name (*P. multicaudata*) was later published by Kirby (1884) in reference, no less, to Peale's unpublished plate for *Lepidoptera Americana*. This made *P. multicaudata* the next available name for this species to replace the preoccupied name *P. daunus*. Following the strict rules of zoological nomenclature, Kirby is recognized as the author of *P. multicaudata* (Brower 1958) and we still use this name today. A mere technicality deprives Peale of the superb name that he proposed nearly fifty years earlier. The inclusion of such anecdotes about the depicted specimens would have greatly enhanced the value of Peale et al. (2015) and made Peale's story all the more compelling. In the introduction for his manuscript, Peale reminds us that an emphasis on mere names "leaves us without further useful information," and as a result, "many a marvelous history is lost."

Most disappointing in Peale et al. (2015) are the many inaccurate or imprecise identifications. Examples include the figures of *Euchloe ausonides* (Lucas, 1852) on Plate XXXII, which are identified as *Euchloe olympia* (W. H. Edwards, 1871). Plate CIV is identified as "A satyr, either *Hermeuptychia hermes* or *sosybius*, which live in the southeastern and mid-Atlantic United States." The name used by Peale for the figured butterfly, *Neonympha phocion*, is a preoccupied synonym of the southeastern species now recognized as *Neonympha areolatus* (J. E. Smith, 1797), which the figures clearly portray. Moreover, *Hermeuptychia sosybius* (Fabricius, 1793) is a very dissimilar species, and it was recently shown that *Hermeuptychia hermes* (Fabricius, 1775) does not occur within the United States (Cong & Grishin 2014). Plate CXI is claimed to depict "various color morphs" of *Cercyonis sthenele* (Boisduval, 1852), but four of the five figures portray two different subspecies of *Cercyonis pegala* (Fabricius, 1775). Plate CXLI is identified as the Neotropical moth *Eumorpha satellitia* (Linnaeus, 1771), but it actually represents *Eumorpha pandorus* (Hübner, 1821), a widespread species in the eastern United States. Peale reared this species from larvae found in 1833 (probably at Philadelphia), as indicated on his drawing on page 203, which in 1880 he incorporated into Plate CXLI. He also illustrated larvae of this species much earlier, around 1817 (drawing at APS). Although the early stages of the moth figured on page 182 are identified as "An inchworm species, possibly of the genus *Eupithecia* (Family Geometridae)," they represent the common geometrid moth *Prochoerodes lineola* (Goeze, 1781), a species also portrayed by Peale in a lithograph intended for *Lepidoptera Americana*. Possibly the result of a transcription error, the larva on page 190 is identified as "*Agrius cingulatus* (family Sphingidae)," when it actually portrays the noctuid moth *Acronicta oblinita* (J. E. Smith, 1797); the previous two drawings depict *Agrius cingulata* (Fabricius, 1775). Although the butterflies on Plate CV are correctly identified as *Cyllopsis gemma* (Hübner, [1809]), it is stated that the figures do not "match this particular species in upper or under surface." In reality, Peale's figures are reasonably accurate portrayals of this distinctive butterfly.

The nomenclature in Peale et al. (2015) is awkward, employing outdated scientific names and unconventional common names. Examples include the genus *Pieris* Schrank, 1801 for *Pontia protodice* (Boisduval & Le Conte, [1830]) (Plate XXXIII), and the genus *Eurema* Hübner [1819] is applied to species now generally placed into the genera *Abaeis* Hübner [1819] and *Pyrisitia* Butler, 1870 (Plates XLIII and XLIV). The incorrect spelling "*charitonius*" is used for *Heliconius charithonia* (Linnaeus, 1767) on Plate LII [see Brower (1994)]. The Old World genus *Precis* Hübner [1819] is used for *Junonia coenia* Hübner [1822] on Plate LXXVIII. The junior synonym *Cycnia antica* Walker, 1856 is used to identify the moth *Cycnia tenera* Hübner, 1818 on Plate CXXXVIII, as well as its larva on page 184 [though not acknowledged in the book, Plate CXXXVIII also portrays adults of the similar *Cycnia inopinatus* (H. Edwards, 1882)]. Common (English) names include "Pallid Swallowtail" for the Pale Swallowtail (Plate IV), "Great Smokies Fritillary" for the Diana Fritillary (Plate LX), and "Coontie Hairstreak" for the Atala (Plate CXXV). The Great Southern White (Plate XXXIV) is mistakenly called "The Great


**Figure 4**. Early stages and food plant of *Limenitis arthemis astyanax*. **a**. Figures by J. Abbot as published on Pl. 10 of Smith & Abbot (1797); **b**. Figures from Peale's Pl. LXXXVIII (AMNH Library image b1083009_98). Red circles show obvious similarities between the illustrations.

Southern Sulphur," and the Eyed Brown (Plate CIII) is erroneously called a "Pearly Eye." Most of the unusual common names of butterflies were proposed by Scott (1986), who attempted to "correct" those he believed were misleading (Scott 2008), though the new names were not generally adopted. Most of the scientific names for butterflies in Peale et al. (2015) also agree with Scott (1986), suggesting this was the primary source used for nomenclature.

The responsibility of identifying all the species and preparing the captions for Peale et al. (2015) was entrusted to David A. Grimaldi (Curator of the American Museum of Natural History's Division of Invertebrate Zoology), who is a highly respected and knowledgeable entomologist. However, this onerous task is beyond the ability of any one person, especially one who is not a lepidopterist. As lepidopterists, we spent a great deal of time closely scrutinizing each of the illustrations in this volume. We ultimately enlisted the help of seven other lepidopterists, including those who specialize in moths and the identification of larvae. We also solicited the assistance of five botanists to identify plants. At our request, staff members of the AMNH Research Library graciously provided scans of Peale's entire handwritten manuscript for "The Butterflies of North America." This text discloses the sources of many of the depicted specimens, which was particularly helpful in identifying Neotropical species. The detailed results of our analysis of Peale's illustrations, page by page in Peale et al. (2015), are presented in Table 1.

As part of our analysis, we also consulted the exhaustive online database of Peale's insect specimens, which are deposited at ANSP and the Carnegie Museum of Natural History (Pittsburgh, Pennsylvania; CMNH) (Gelhaus et al. 2004). We discovered that many of the butterflies and moths that Peale portrayed still exist, including adults that resulted from larvae depicted in his sketchbook (Fig. 3). The ability to associate illustrations with actual specimens is a valuable means to connect library and museum collections (Pethers & Huertas 2015). Such an investigation of Peale's source material would have been a valuable addition to Peale et al. (2015). The results of our examination of Peale's figured specimens also are included in Table 1.

In addition to specimens that Peale personally collected in New York, Pennsylvania, New Jersey, Florida, Colombia ("New Grenada"), and Brazil, he figured butterflies that were received from many distinguished friends and correspondents: Baron Friedrich K. J. F. von Gerolt (1797-1879), a Prussian diplomat and mineralogist who lived and traveled in Mexico during the 1820s-1840s (Rowen 2012); Hans B. Hornbeck (1800-1870), a Danish physician who lived in the Virgin Islands from 1824 to 1844 (Acevedo-Rodríguez [1996]); John E. Le Conte (1784-1860), an American naturalist who owned property in Georgia and coauthored *Histoire générale et iconographie des Lépidoptères et des chenilles de l'Amérique septentrionale* by Boisduval & Le Conte (1829-[1837]), an early influential book on North American butterflies; Frederick E. Melsheimer (1782-1873), a prominent Pennsylvania entomologist; John Millington (1779-1868), an English civil engineer who lived in Guanajuato, Mexico, from 1829 to 1832 (Tarleton 1966); Thomas Nuttall (1786-1859), an English zoologist and botanist who, during the summer of 1834, crossed the Rocky Mountains and reached the Pacific Ocean in Washington as part of the Wyeth Expedition, then spent the summer of 1835 exploring northern Oregon and southern Washington (Pennell 1936); Charles Pickering (1805-1878), a fellow Philadelphian who participated with Peale as a naturalist for the Wilkes Expedition, during which he explored the interior of Oregon Territory (now Washington, from Puget Sound to Ft. Colville) in 1841 (Barry 1929); Felipe Poey (1799-1891), a celebrated Cuban zoologist; William Rich (1800-1864), a botanist who also participated in the Wilkes Expedition and traveled overland with Peale in 1841 from the Columbia River of Oregon to northern California (Poesch 1961; Eyde 1986); Ramón de la Sagra (1797-1871), a Spanish botanist who lived in Cuba between 1821 and 1835 (Fey & Racine 2000); Thomas Say (1787-1834), a pioneering American entomologist and conchologist; John K. Townsend (1809-1851), an American naturalist who accompanied T. Nuttall on the Wyeth Expedition in 1834 across the Rockies to the Pacific Northwest, then traveled with Nuttall during the summer of 1835 in northern Oregon and southern Washington (Townsend 1839). In addition to adult specimens, some of the larvae that Peale portrayed in his sketchbook were presented by others, including Robert E. Griffith, Jr. (1798-1850), a Philadelphia physician and member of the Academy of Natural Sciences.

Peale also borrowed specimens to illustrate. Some were received from the lepidopterist F. H. Herman Strecker (1836-1901) of Reading, Pennsylvania, and others came from the collections of the Entomological Society of Philadelphia (ESP; founded 1859) and its successor, the American Entomological Society (AES; founded 1867). The latter collection was deposited "in perpetuity" with ANSP in 1915 (Rehn 1959). In 1963, however, ANSP

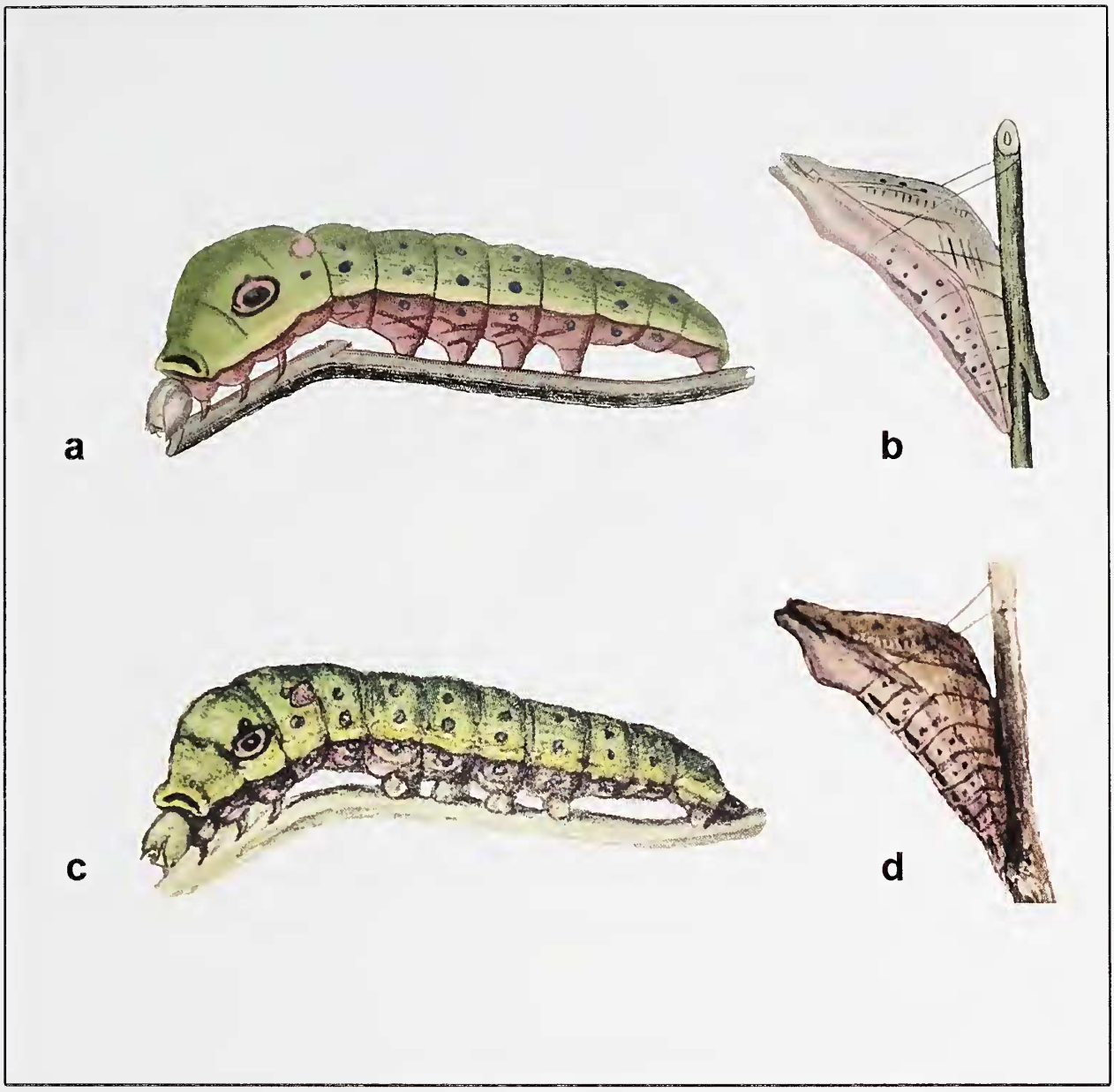


**Figure 5.** Early stages of *Papilio palamedes*. **a, b**. Figures by John Abbot from Pl. 5 of Boisduval & Le Conte (1829-[1837]); **c, d**. Duplicate figures by Peale for his Pl. XVI (AMNH Library image b1083009_16).

negotiated an exchange of the bulk of its general Lepidoptera collection for the Orthoptera collection at CMNH (Gelhaus et al. 2004). The specimens that Peale figured from the ESP and AES collections were almost certainly sent to CMNH as part of this exchange (J. D. Weintraub pers. comm.). Peale's collection, which was kept at ANSP beginning in 1876 (Stone 1915), was officially presented to the Academy by his second wife, Lucinda Peale, in 1888 (Ridings 1889; Foutch 2011). Some of his specimens, which had been deposited in the general collection at ANSP, were inadvertently sent to CMNH in 1963.

Grimaldi (2015) identifies Peale as "America's first lepidopterist," and bestows him with the distinction of "the first serious American naturalist of Lepidoptera." Although Peale is certainly among the more important early lepidopterists in America, the English naturalist John Abbot (1751-c.1840) is arguably the first American lepidopterist. Though

not an American by birth, Abbot spent over sixty years in Georgia, where he reared countless species of Lepidoptera for the first time. He documented their life histories in thousands of illustrations and accompanying notes, many of which stood for nearly two centuries as the only such records for those species. Peale was familiar with Abbot's work and even met him while traveling through Georgia (Edwards 1887-1897). In fact, our analysis of Peale's artwork reveals that he derived at least thirty-six of his figures of larvae, pupae, and food plants in his manuscript "The Butterflies of North America" from Abbot's earlier drawings, as published in Smith & Abbot (1797) (Fig. 4), and especially Boisduval & Le Conte (1929-[1837]) (Fig. 5). Only twice did Peale actually admit to copying figures from these publications, in the text for Plates VI (Fig. 6) and CI. Furthermore, Peale obviously took cues from these publications about which food plants to portray in his butterfly illustrations. Because some of these plants could be found where Peale lived, he was able to incorporate known hosts into illustrations of species that he did not personally rear. The life history information presented in Smith & Abbot (1797) and Boisduval & Le Conte (1929-[1837]) was derived almost exclusively from the drawings and writings of Abbot. Not only did Peale indirectly borrow figures and information from Abbot, he also copied figures of larvae and pupae from other publications, including Macleay (1834) (Pl. CXXVI), Poey (1832) (Pl. XXXIX), Stoll (1787-1790) (Pls. LI, LXXXVI), and Westwood (1834) (Pl. XXXI). In some cases, Peale's depiction of adults from one locality, along with the early stages from another, resulted in the portrayal of two different subspecies on the same plate (e.g. Pl. XXXIV). In the text for Plates XXXI, XCVII, and CXXXIII, Peale also planned to include small illustrations of early stages and food plants, which he traced from figures in Westwood (1834) and Riley (1870, 1876) without attribution.

We also discovered that Peale copied some of his plant figures from published works, particularly the multivolume book on North American trees by the French botanist François André Michaux (1770-1855). Peale began the practice of copying Michaux's figures during the 1830s, when he was working on *Lepidoptera Americana* (Peale 1833). He most likely employed the English edition of Michaux's work, rather than the original French edition, published 1810-1813. The leaves and fruit of sassafras (*Sassafras albidum* (Nuttall) Nees) on Plate 3 of Peale (1833) were derived from Plate 81 of Michaux (1817-1819). For his planned Plate 5 of *Lepidoptera Americana*, Peale duplicated the figure of black gum (*Nyssa sylvatica* Marshall) from Plate 110 of Michaux (1817-1819). For Plates VI, VII, and XCVI (Fig. 6) of his "Butterflies of North America," Peale relied on Michaux's treatise for figures of pawpaw (*Asimina triloba* (Linnaeus) Dunai), willow oak (*Quercus phellos* L.), and devilwood (*Osmanthus americanus* (Linnaeus) Benth. & Hook f. ex A. Gray). For Plate V, Peale adapted the leaf and fruit of *A. triloba* from elements of Plate II of Audubon (1827-1838). He likely copied plants from other publications as well. As a result of such duplication, some of Peale's illustrations are almost entirely derivative, with only the adult butterflies representing original renderings (e.g. Pls. V, VI) (Fig. 6).

Peale apparently infused his illustrations with plagiarized material when it was necessary to convey a more complete story than was possible through his own experiences. He was aging and undoubtedly suffered more difficulties in collecting suitable material to illustrate. He also was lured by the great amount of published material available at ANSP. Surprisingly, Peale criticized other naturalists for similar conduct, arguing that it was "difficult to collect reliable original matter – few persons with time and means are willing to devote themselves to the labor of careful observation . . ." (introduction to "Butterflies of North America," AMNH). One wonders if his choice to incorporate derivative matter ultimately impacted his chances of publishing his opus. Others may have noticed that his work was not entirely original. Nonetheless, borrowing figures from other publications was not unusual during the nineteenth century. Figures from Plates 3 and 4 of *Lepidoptera Americana* (Peale 1833) were copied for Plate 12 of Duncan (1841), which was reproduced as Plate CXVII in Kirby (1897).

Like Abbot, Peale also duplicated his own figures and compositions. Such repetition was a convenient, time-saving practice when rendering figures of the same species (Calhoun 2007). During the preparation of "The Butterflies of North America," Peale repeated some of the figures that he had included on unpublished plates for the anticipated continuation of *Lepidoptera Americana* (Peale 1833). In several instances he repurposed fragments of those unpublished lithographs, clipping the figures out and pasting them onto the plates for his proposed new book (Pls. III, IV, XLIII). He also copied his earlier life history studies for illustrations in "Butterflies of North America."

Although Grimaldi (2015) states that "all the species for which life histories and host plants are

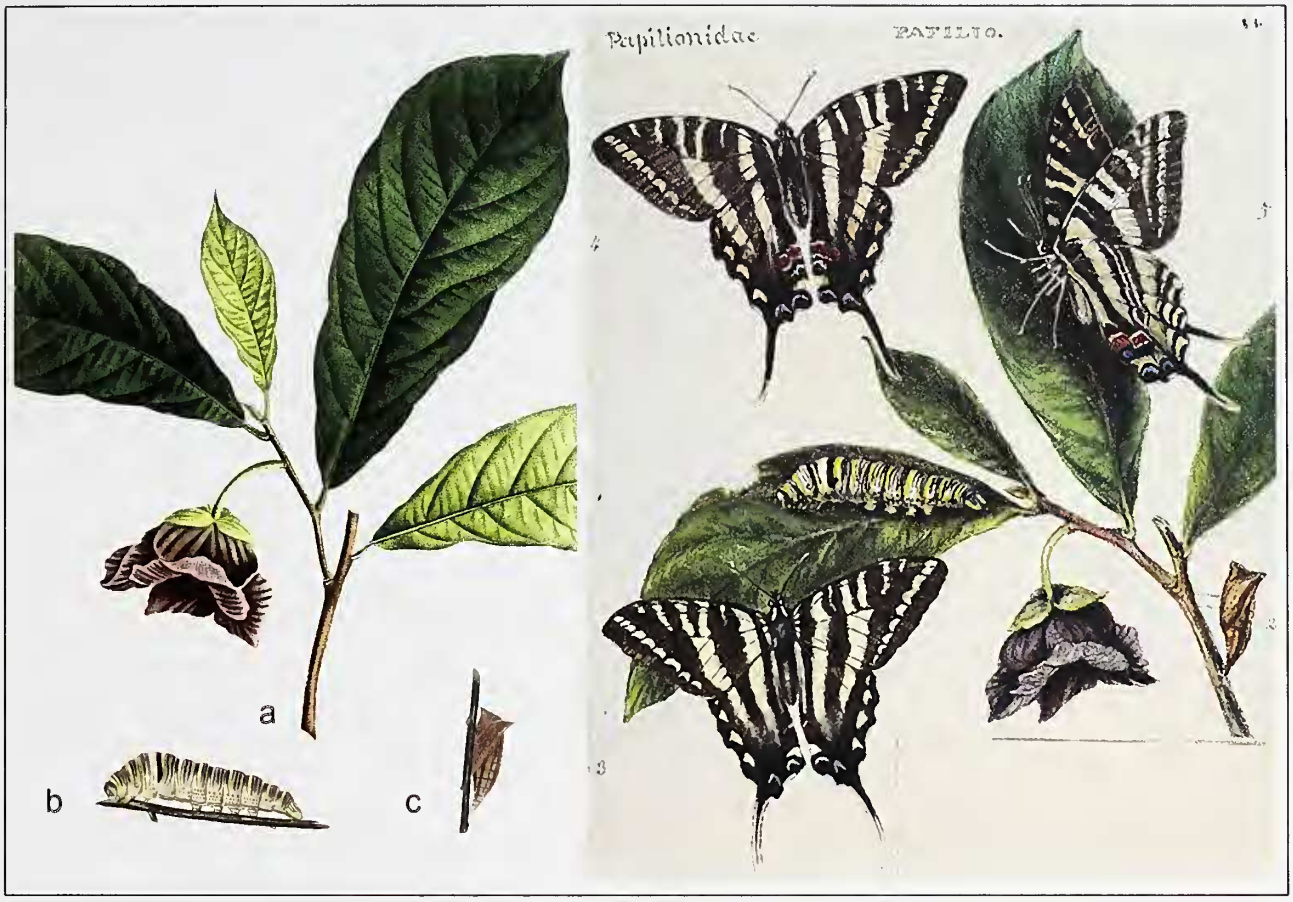


**Figure 6.** Early stages and food plant of *Eurytides marcellus*. **Left**: **a**. *Asimina triloba* from Pl. 60 of Michaux (1817-1819); **b**, **c**. larva and pupa by John Abbot from Pl. 2 of Boisduval & Le Conte (1829-[1837]) (pupa image reversed). **Right**: Peale's Pl. VI (AMNH Library image b1083009_5).

depicted are those that occur in the eastern United States, gathered in Red Bank and Ocean Grove, New Jersey," this does not take into account the many early stages that Peale derived from secondary sources, as well as his portrayal of species from other regions (e.g. Pls. XXXIX, LV). These previously overlooked aspects of Peale's work do not diminish his contributions, but instead offer valuable insights into his artistic methods and philosophy.

Peale aspired to publish a comprehensive work on North American Lepidoptera based on his illustrations and observations. The year before he died, he explained that his manuscript, "The Butterflies of North America," was the natural continuation of his disappointing *Lepidoptera Americana*: "This is not the labor of a day, but that of a life . . . a labor of love . . . [which doesn't] furnish much nourishment for the body" (Peale 1884). Both of Peale's attempts to publish his ambitious work failed, leaving his dream tragically unfulfilled. A century ago, Stone (1915) lamented, "There is something pathetic in the history of the natural history interests of the Peales . . . there are today no adequate results to stand forth as a monument to the earnest efforts of this notable family." Peale et al. (2015) only partially satisfy this debt, as the decision to omit the entire text of Peale's "lost manuscript" deprives us of his true vision. Not only do Peale's meticulous commentaries place his labors into the proper scientific context, they also remind us that his drawings are more than just images of pretty butterflies and metaphors for rebirth. They symbolize the embodiment of an extraordinary lifetime of discovery. A greater attention to accuracy, and the inclusion of more information, would have elevated Peale et al. (2015) from an eye-catching celebration of Peale's artistic accomplishments to a valuable scientific contribution. Such a fusion of art and science is precisely what Peale intended.

**Table 1.** Lepidoptera and plants figured in Peale et al. (2015), by page number. Latin names of butterflies follow Pelham (2015) and Warren et al. (2015). English names of butterflies follow NABA (2011-2015) and Warren et al. (2015). Latin and English names of moths follow MPG (2012). Botanical names mostly follow USDA (2015). Localities of figured specimens are from Peale's accompanying text. Unless otherwise noted, the plants figured are known hosts of the associated species of Lepidoptera.

| Page no. | Insect species | Plant species | Notes |
|---|---|---|---|
| 20. | Tiger Swallowtail, *Papilio glaucus* Linnaeus, 1758 | Tuliptree, *Liriodendron tulipifera* Linnaeus | The name used by Peale, *Papilio turnus*, is a junior synonym of the name *P. glaucus*. See drawing on pg. 28. |
| 28 | Tiger Swallowtail, *Papilio glaucus* Linnaeus, 1758 | | Peale conceded that dark females are merely a form of this species, though he erroneously mentions in his notes that "black males are very uncommon." The female portrayed (along with its pupal exuvia) resides in Peale's collection at ANSP (box 1A, nos. 4, 6). It was reared from a larva that Peale found in 1834 at Camden, New Jersey. See drawing on pg. 20. |
| 29 | Two-tailed Swallowtail, *Papilio multicaudata* W. F. Kirby, 1884 | | Hand-colored lithographs cut from an unpublished plate for *Lepidoptera Americana,* printed in 1836 (Fig. 3). The name used by Peale, *Papilio daunus*, is a preoccupied name for this species. He first used the name *multicaudata* in association with the unpublished plate. This name was later published by Kirby (1884) in reference to Peale's plate, making Kirby the accepted author of this name, though it was originally coined by Peale (Brower 1958). The figured specimen, collected at Guanajuato, Mexico, by John Millington and given to Peale in 1835, resides in Peale's collection at ANSP (box 26, no. 3). The caterpillar of this species is not always scarlet as stated in the published caption. It is green, but becomes more reddish as it approaches pupation. This illustration was figured by Foutch (2011). |
| 30 | Pale Swallowtail, *Papilio eurymedon* Lucas, 1852 | | Hand-colored lithographs cut from an unpublished plate for *Lepidoptera Americana,* printed in 1836, for which he proposed the name *Papilio lewisii* in honor of the American explorer Meriwether Lewis. This name was eventually published by Kirby (1884), but it is a junior synonym of *P. eurymedon*. The figured specimen was collected by Thomas Nuttall in the Rocky Mountains in 1834. Although dos Passos (1965) claimed that the figured specimen was in Peale's collection at ANSP, it is not present. |
| 31 | Zebra Swallowtail, *Eurytides marcellus* (Cramer, 1777) (spring fm.) | Pawpaw, *Asimina triloba* (Linnaeus) Dunal | This species does not occur in Cuba as indicated. The name used by Peale, *Papilio ajax*, was suppressed by the ICZN in 1954. The larva and pupa are based on figures drawn by John Abbot in Georgia, as published on Plate 1 of Boisduval & Le Conte (1829-[1837]). The plant was adapted from elements of Plate II of Audubon (1827-1838). See drawing on pg. 32. |
| 32 | Zebra Swallowtail, *Eurytides marcellus* (Cramer, 1777) (late spring form and summer fm. 'lecontei Rothschild & Jordan, 1906) | Pawpaw, *Asimina triloba* (Linnaeus) Dunal | The larva and pupa are based on figures drawn by John Abbot in Georgia, as published on Plate 2 of Boisduval & Le Conte (1829-[1837]) (Fig. 6). In the text for this drawing, Peale admitted that he copied those figures. The two adult specimens portrayed were collected in Georgia by John E. Le Conte. The plant was copied from Plate 60 of Michaux (1817-1819) (Fig. 6). See drawing on pg. 31. |
| 33 | Cuban Kite Swallowtail, *Eurytides celadon* Lucas, 1852 | Willow oak, *Quercus phellos* Linnaeus | The name used by Peale, *Papilio sinon*, is preoccupied (type material suggests that it applies to *E. marcellus*). Peale's specimens were received from Felipe Poey of Havana, Cuba. The plant is not a host, but was inserted to enhance the composition. |
| 34 | Telesilaus Swallowtail, *Protesilaus telesilaus* (C. & R. Felder, 1864) ssp. | Smooth Solomon's seal, *Polygonatum biflorum* (Walter) Elliott | The name used by Peale, *Papilio archesilaus*, now applies to the subspecies *Protesilaus protesilaus archesilaus* (C. & R. Felder, 1865). Peale reportedly collected three specimens of this species in New Grenada (Colombia) during August and September 1832. This species occurs in Central and South America. The plant is not a host, but was inserted to enhance the composition. |
| 35 | Giant Swallowtail, *Papilio cresphontes* Cramer, 1777 | Plant unidentifiable | The name used by Peale refers to a similar species, *Papilio thoas* Linnaeus, 1771. The figured specimen, collected in 1852 at East Rockport, Ohio, by Jared P. Kirtland, resides in Peale's collection at ANSP (box 18, no. 2). The larva and pupa are based on figures rendered by John Abbot in Georgia, as published on Plate 13 of Boisduval & Le Conte (1829-[1837]). |

Table 1 (cont.)

| Page no. | Insect species | Plant species | Notes |
|---|---|---|---|
| 36 | Androgeus Swallowtail, *Papilio androgeus epidaurus* Godman & Salvin, 1890 | Indian shot, *Canna indica* Linnaeus | The name used by Peale, *Papilio polycaon*, is a junior synonym of the name *P. androgeus* Cramer, 1775. In addition to Central America as indicated in the published caption, the depicted subspecies occurs in Mexico and the Greater Antilles. The hindwing of the female does not accurately portray the multiple tails that are typically present. The plant is not a host, but was added to enhance the composition. |
| 37 | Machaonides Swallowtail, *Papilio machaonides* Esper, 1796 | | The name used by Peale, *Papilio lycoraeus*, is a junior synonym of the name *P. machaonides*. Peale attributed the figured specimen to "St. Domingo" (=Hispaniola). |
| 38 | Bahamian Swallowtail, *Papilio a. andraemon* (Hübner, [1823]) | | The figured specimen was collected by Felipe Poey near Havana, Cuba. This subspecies occurs in Cuba and Jamaica. |
| 39 | Black Swallowtail, *Papilio polyxenes asterias* Stoll, 1782 | Common rue, *Ruta graveolens* Linnaeus | The early stages were derived from an earlier drawing by Peale, which is reproduced on pg. 244 (second row, far left). |
| 40 | Spicebush Swallowtail, *Papilio t. troilus* Linnaeus, 1758 | Sassafras, *Sassifras albidum* (Nuttall) Nees | Although it is stated in the published caption that the "forewing marginal spots are depicted as white instead of the actual yellow," these spots vary from white to yellowish. Peale derived the figures of the pupa and one of the larvae from his earlier drawing reproduced on pg. 245 (top row, second from left). |
| 41 | Spicebush Swallowtail, *Papilio t. troilus* Linnaeus, 1758, ab. radiatus Strecker 1900 | | In the text for this drawing, Peale stated that this specimen was collected by a friend at Washington, D.C., in 1847. It was referred to by Strecker (1878, 1900) as "One example in coll. Peale," and "Washington, D.C., Titian R. Peale," respectively. Peale wrote in his collection notes at ANSP (box 40, no. 7) that this specimen was sent to F. H. Herman Strecker in June 1877 in exchange for a specimen of *Urania sloanus* (see entry for the drawing, pg. 138). Strecker's collection catalog at FMNH confirms that this specimen of *P. troilus* was received from Peale. |
| 42 | Palamedes Swallowtail, *Papilio p. palamedes* Drury, 1773 | | The red spots are not exaggerated as stated in the published caption. The figured specimen is from Alabama. The larva and pupa are based on figures drawn by John Abbot in Georgia, as published on Plate 5 of Boisduval & Le Conte (1829-[1837]) (Fig. 5). The depicted nominotypical subspecies does not occur in Mexico, where it is replaced by *P. p. leontis* (Rothschild & Jordan, 1906). |
| 43 | Magnificent Swallowtail, *Papilio g. garamas* (Geyer, [1829]) | | The name used by Peale, *Papilio asclepius*, is a junior synonym of the name *P. garamas*. A specimen in Peale's collection at ANSP (box 17, no. 4), collected in Mexico and received from Baron Gerolt in 1846, probably served as the model for these figures. The depicted nominotypical subspecies occurs in Mexico. |
| 44 | Pipevine Swallowtail, *Battus p. philenor* (Linnaeus, 1771) | Virginia snakeroot, *Aristolochia serpentaria* Linnaeus | The larva and pupa are based on figures drawn by John Abbot in Georgia, as published on Plate 11 of Boisduval & Le Conte (1829-[1837]), who also identified the food plant of this species as *Aristolochia serpentaria*, thereby giving Peale an appropriate (and locally available) host to portray. |
| 45 | Fig. 1: De Villiers' Swallowtail, *Battus devilliers* (Godart, [1824]); Fig. 2: Oxynius Swallowtail, *Papilio oxynius* (Geyer, [1827]) | | Although the published caption states that *B. devilliers* "lives in southern Florida," all known Florida records are dubious. The figured specimen of *B. devilliers* was received from Felipe Poey in Cuba. The specimen of *P. oxynius* (a Cuban species) was from the collection of the American Entomological Society (probably now at CMNH). The published caption on pg. 46 was presumably intended for this page. |
| 46 | Fig. 1: White-crescent Swallowtail, *Mimoides t. thymbraeus* (Boisduval, 1836); Fig. 2: Polydamas Swallowtail, *Battus polydamas thyamus* (Rothschild & Jordan, 1906) | | The specimen of *M. thymbraeus* was loaned from the collection of the Entomological Society of Philadelphia (probably now at CMNH). The figured specimen of *P. p. thyamus* is from St. Thomas, Virgin Islands, and corresponds to a female in Peale's collection at ANSP (box 61, no. 1), which was collected by Hans B. Hornbeck in 1838. This subspecies occurs in the Virgin Islands and Puerto Rico. The published caption was presumably intended for page 45. |

Table 1 (cont.)

| Page no. | Insect species | Plant species | Notes |
|---|---|---|---|
| 48 | Green-patch Swallowtail, *Battus laodamas copanae* (Reakirt, 1863) | | The figured specimen was from the collection of the Entomological Society of Philadelphia (probably now at CMNH). Strecker (1872-1878) mentions this specimen, believing it to be one of only two known at that time (the other being the holotype in Strecker's collection, now at FMNH). The depicted subspecies occurs from Mexico to Costa Rica. |
| 49 | Variable Swallowtail, *Mimoides p. phaon* (Boisduval, 1836) | | Peale implied that the figured specimens were from Mexico. They were loaned from the collection of the Entomological Society of Philadelphia (probably now at CMNH). This subspecies occurs from Mexico to Panama. |
| 50 | True Cattleheart, *Parides eurimedes* (Stoll, 1782) ssp. | | The name used by Peale, *Papilio mylotes*, is now applied to a different subspecies of *P. eurimedes* (see drawing on pg. 51). Peale collected the two figured specimens with "one sweep of a net" near Cartagena, Colombia, in 1831 or 1832. This species is distributed from Mexico to South America. |
| 51 | True Cattleheart, *Parides eurimedes mylotes* (H. Bates, 1861) | | The figured specimens are from Mexico, and were borrowed from the collection of the Entomological Society of Philadelphia (probably now at CMNH). This species is distributed from Mexico to South America. |
| 52 | Cuban Cattleheart, *Parides g. gundlachianus* (C. & R. Felder, 1864) | | The figured specimens were borrowed from the collection of the Entomological Society of Philadelphia (probably now at CMNH), having been received from Felipe Poey of Havana, Cuba. This illustration was figured by Sellers (1980). |
| 53 | Poey's Swallowtail, *Papilio caiguanabus* Poey [1852] | | The figured female was borrowed from the collection of the American Entomological Society (probably now at CMNH). |
| 55 | Clodius Parnassian, *Parnassius clodius claudianus* Stichel, 1907 | Milkweed, *Asclepias* Linnaeus sp. | Peale proposed (but never published) the name "*Parnassius townsendii*" for this species in honor of John K. Townsend, who collected the figured female on "the Columbia River" (Oregon or Washington) in 1835. A discolored female at CMNH from Peale's collection, labeled "Columbia R.," is undoubtedly this specimen. Peale believed that the English entomologist Edward Doubleday had robbed him of his description of this species in 1847 when he named this species *Parnassius smintheus*, the name that Peale used on this plate. Peale should have described the depicted butterfly, as it actually represents a different species, which was not named *P. clodius* until 1855. The plant is not a host, but was inserted to enhance the composition. |
| 56 | Caribbean Swallowtail, *Papilio pelaus atkinsi* M. Bates, 1935 | Plant unidentifiable | The depicted subspecies occurs in Cuba. |
| 57 | Melite Mimic White, *Enantia melite* (Linnaeus, 1763) ssp. | Plant unidentifiable | Peale collected the figured specimens on "the Island of St. Catherine," which refers to Santa Catarina Island off the coast of Brazil. Peale visited this island with the Wilkes Expedition in 1838. This species is distributed from Mexico to South America. |
| 58 | Figs. 1-2: Pure-banded Dartwhite, *Catasticta t. teutila* (Doubleday, 1847); Figs. 3-4: Mexican Dartwhite, *Catasticta n. nimbice* (Boisduval, 1836) | | The name used by Peale, *Euterpe sebennica* (misspelled "*Sebenica*"), is a junior synonym of the name *teutila* (*Euterpe*). The figured female of this species, acquired in 1846 and identified as "*Euterpe sebenica*" from Mexico, resides in Peale's collection at ANSP (box 17, no. 1). The depicted nominotypical subspecies occurs in central Mexico. The figured specimen of *C. n. nimbice*, collected at Guanajuato, Mexico, by John Millington and given to Peale in 1835, resides in Peale's collection at ANSP (box 27, nos. 12, 13). This subspecies is distributed from Texas to southern Mexico. |
| 60 | Social White, *Eucheira s. socialis* Westwood, 1834 | | This subspecies occurs in central and southern Mexico. Two specimens in Peale's collection at ANSP (box 27, nos. 19, 20), collected at Guanajuato, Mexico, by John Millington and given to Peale in 1835, likely served as the models for this figure. Peale copied the figures of the silk pupal nest from an illustration that accompanied the original description of this species by Westwood (1834, Pl. 6). In the text for this illustration, Peale planned to include figures of the pupa and adult antennae of this species, which he traced from Westwood (1834). In 1883, Peale loaned this illustration to Henry C. McCook, a naturalist and minister in Philadelphia (Foutch 2011). |

Table 1 (cont.)

| Page no. | Insect species | Plant species | Notes |
|---|---|---|---|
| 61 | Checkered White, *Pontia protodice* (Boisduval & Le Conte, [1830]) | Common dandelion, *Taraxacum officinale* F.H. Wiggers | The plant is not a host, but was inserted to enhance the composition. |
| 62 | Fig. 1: Pine White, *Neophasia m. menapia* (C. & R. Felder, 1859); Figs. 2-3: Sara Orangetip, *Anthocharis sara* Lucas, 1852 ssp.; Figs. 4-5: Falcate Orangetip, *Anthocharis midea annickae* dos Passos & Klots, 1969; Figs. 6-7: Large Marble, *Euchloe a. ausonides* (Lucas, 1852) | Plant unidentifiable | The figured specimen of *N. menapia* was collected in 1835 on the Columbia River by Thomas Nuttall, who gave it to Peale in 1836. A male *E. ausonides* in Peale's collection at ANSP (box 16, no. 3), identified as "*Anthocaris Olympia*" from Oregon, is undoubtedly the figured specimen of this species. Peale proposed (but never published) the name "*Anthocaris pickeringii*" for this specimen, in honor of Charles Pickering, who had collected it. Peale implied that he collected the figured *A. midea* in Pennsylvania or Virginia. With the exception of *E. ausonides*, Peale previously included these figures on an unpublished lithograph for *Lepidoptera Americana*, printed in 1836 (ANSP). |
| 65 | Adults: Great Southern White, *Ascia monuste eubotea* (Godart, 1819); early stages: *Ascia monuste phileta* (Fabricius, 1775) | Probably Spiderwisp, *Cleome gynandra* Linnaeus | The figured specimens were received from Jamaica, and a female at CMNH from Peale's collection, labeled "Jamaica," possibly served as the model for the figured females. Although Peale mentioned that he was unsure of "having seen them in "New Grenada" (Colombia), there is a specimen labeled as such at CMNH from his collection. The larva and pupa in this drawing are based on figures drawn by John Abbot in Georgia, as published on Plate 16 of Boisduval & Le Conte (1829-[1837]), who also identified the food plant of this species as *Cleomes pentaphylla* Linnaeus (=*C. gynandra*), also based on a drawing by Abbot (Calhoun 2004), thus giving Peale an appropriate plant to portray. In his text for this drawing, Peale noted that this African plant was cultivated in local gardens. The subspecies *A. m. eubotea* occurs from Cuba to the Virgin Islands, while the subspecies *A. m. phileta* is found in the southeastern United States and the Bahamas. This illustration was figured by Haifley (1981). |
| 66 | Cabbage White, *Pieris r. rapae* (Linnaeus) | Probably winter cress, *Barbarea vulgaris* W. T. Aiton | The specimen portrayed as fig. 4 was possibly part of the type series of *Pieris rapae* var. *immaculata* Skinner & E. Aaron, 1889 (two paratypes from Peale's collection are deposited at ANSP and CMNH). Based on the original description of *immaculata*, Peale's specimens of this form were collected around Philadelphia, Pennsylvania. The early stages were derived from an earlier drawing by Peale, which is reproduced on pg. 245 (bottom row, far right). |
| 68 | Florida White, *Glutophrissa drusilla poeyi* (Butler, 1872) | Plant unidentifiable | The figured specimens were collected by Felipe Poey near Havana, Cuba. This subspecies occurs in the Bahamas, Cuba, and the Cayman Islands (not "from Florida to Brazil," as indicated in the published caption). The name used by Peale, *Pieris margarita*, is a nomen nudum and junior synonym of the name *Papilio drusilla* Cramer, 1777. |
| 69 | Figs. 1-2: Orange-barred Sulphur, *Phoebis philea huebneri* Fruhstorfer, 1907; Figs. 3-4: Statira Sulphur, *Aphrissa statira cubana* d'Almeida, 1939 | | The name used by Peale for figures 1 and 2, *Callidryas thalestris*, applies to a different subspecies of *P. philea*. A male *P. p. huebneri* at CMNH from Peale's collection, labeled "Cuba," is a close match to these figures. The figured male *A. s. cubana*, also a Cuban subspecies, was presented to Peale by Thomas Say. |
| 70 | Cloudless Sulphur, *Phoebis sennae eubule* (Linnaeus) | Partridge pea, *Chamaecrista fasciculata* (Michaux) Greene | The figured butterflies were collected in Georgia by John E. Le Conte. The subspecies *P. s. eubule* occurs in the eastern United States, Canada, and probably parts of Cuba. Different subspecies occur elsewhere. The larva and pupa are based on figures drawn by John Abbot in Georgia, as published on Plate 24 of Boisduval & Le Conte (1829-[1837]), who also identified the food plant of this species as "*Cassia chamaecrista*" (=*Chamaecrista fasciculata*), thereby giving Peale an appropriate (and locally available) host to portray. |
| 72 | Orbed Sulphur, *Aphrissa o. orbis* (Poey, 1832) | Pride-of-Barbados, *Caesalpinia pulcherrima* (Linnaeus) Swarz | The figured specimens were received from Felipe Poey of Havana, Cuba. The figures of the early stages are mirror-image reproductions of uncolored figures in Poey (1832), who provided details on their coloration and mentioned the food plant. A discolored adult male *A. orbis* at CMNH, labeled "Cuba" from Peale's collection, was probably also received from Poey. Peale's depiction of *C. pulcherrima* is inaccurate and was possibly copied from another source. |

Table 1 (cont.)

| Page no. | Insect species | Plant species | Notes |
|---|---|---|---|
| 74 | Figs. 1-2: Yellow Angled-Sulphur, *Anteos maerula* (Fabricius, 1775); Figs. 3-4: White Angled-Sulphur, *Anteos clorinde* (Godart, [1824]) | | The figured specimen of *A. maerula*, collected near Mexico City by Baron Gerolt and given to Peale in 1846, resides in Peale's collection at ANSP (box 17, nos. 7, 8). This species feeds on additional Fabaceae, not just species of *Cassia* as indicated in the published caption. The figured "female" (male) of *A. clorinde*, collected at Guanajuato, Mexico, by John Millington and given to Peale in 1835, resides in Peale's collection at ANSP (box 28, no. 21). |
| 75 | Clouded Sulphur, *Colias p. philodice* Godart, 1819 | Red clover, *Trifolium pratense* Linnaeus | The figures at lower right portray a small individual of this species, which Peale misidentified as *Nathalis plauta* E. Doubleday, 1847, a butterfly that occurs in South America. Peale indicated that he caught "*N. plauta*" near Holmesburg, Pennsylvania, on 2 August. The model for these figures, a male at CMNH from Peale's collection labeled "*Nathalis plauta*" was collected 2 August 1876 along Pennypack Creek, Holmesburg (Philadelphia), Pennsylvania. The early stages of *C. philodice* were derived from an earlier drawing by Peale, which is reproduced on pg. 245 (third row, far right). |
| 77 | Southern Dogface, *Zerene c. cesonia* (Stoll, 1790) | American wisteria, *Wisteria frutescens* (Linnaeus) Poiret | This species is not montane in nature as indicated in the published caption, but primarily occurs at lower elevations, down to sea level. The figured specimen was collected in Georgia by John E. Le Conte. The depicted nominotypical subspecies ranges from the southern United States and Cuba, southward to Colombia. The larva and pupa are based on figures drawn by John Abbot in Georgia, as published on Plate 22 of Boisduval & Le Conte (1829-[1837]), who noted that this species feeds on "*glycine*" (=*Glycine* Willdenow), an Old World genus previously used for species now placed into *Wisteria* Nuttall. This gave Peale an attractive (and locally available) food plant to portray. |
| 78 | Sleepy Orange, *Abaeis nicippe* (Cramer, 1779) | American senna, *Senna hebecarpa* (Fernald) Irwin & Barneby | Hand-colored lithograph from *Lepidoptera Americana* (see drawing on pg. 168). Peale personally reared this species and implied that the figured individuals were from Pennsylvania. |
| 79 | Little Yellow, *Pyrisitia l. lisa* (Boisduval & Le Conte, [1830]) | Partridge pea, *Chamaecrista fasciculata* (Michaux) Greene | The larva and pupa are based on figures drawn by John Abbot in Georgia, as published on Plate 19 of Boisduval & Le Conte (1829-[1837]), who identified one of the food plants as "*Cassia*," probably giving Peale the idea to portray the butterfly with the locally available *C. fasciculata*, which was once placed in the genus *Cassia*. |
| 80 | Figs. 1-2: Salome Yellow, *Eurema salome jamapa* (Reakirt, 1866); Figs. 3-4: Dina Yellow, *Eurema d. dina* (Poey, 1832) | Plant unidentifiable | The figured specimen of *E. salome*, collected at Guanajuato, Mexico, by John Millington and given to Peale in 1835, resides in Peale's collection at ANSP (box 28, no. 8). This specimen is identified as "*Terias Mexicana*," the same name that Peale used for these figures, which refers to the similar species *Eurema mexicana* Boisduval, 1836. The subspecies *E. s. jamapa* occurs from the southwestern United States southward to Panama. Peale noted that his specimens of *E. dina* were received from Felipe Poey and Ramón de la Sagra of Cuba. A female of this species at CMNH from Peale's collection was evidently acquired at a later date, as it is labeled "St Dom'go (=Hispaniola) and represents the subspecies *E. d. mayobanex* (M. Bates, 1939). |
| 81 | Figs. 1-2: Red Cracker, *Hamadryas amphinome fumosa* (Fruhstorfer, 1915); Figs. 3-4: Guatemalan Cracker, *Hamadryas guatemalena* (H. Bates, 1864) ssp. | | The name used by Peale for figures 3 and 4, *Ageronia fornax*, refers to a different species, *Hamadryas fornax* (Hübner, [1823]). Peale found *H. a. fumosa* "not uncommon" in New Grenada" (Colombia) in 1831 or 1832. A specimen of *H. a. fumosa* from Peale's collection at ANSP, labeled "N. Grenada" probably served as the model for these figures. |
| 82 | Figs. 1-2: Gray Cracker, *Hamadryas februa ferentina* (Godart, [1824]); Figs. 3-4: Variable Cracker, *Hamadryas feronia* (Linnaeus, 1758) ssp.; Figs. 5-6: Arete Cracker, *Hamadryas arete* (Doubleday, 1847) | | Peale identified figures 5 and 6 as *Ageronia arethusa*, which is a preoccupied junior synonym of another species, *Hamadryas laodamia* (Cramer, 1777). The figured specimen of the South American *H. arete* was possibly borrowed from the collection of the Entomological Society of Philadelphia. |

Table 1 (cont.)

| Page no. | Insect species | Plant species | Notes |
|---|---|---|---|
| 83 | Monarch, *Danaus p. plexippus* (Linnaeus, 1758) | Swamp milkweed, *Asclepias incarnata* Linnaeus | Peale's write-up for this illustration is an enlarged version of the text that he had previously published for this species in *Lepidoptera Americana* (Peale 1833, Pl. 7). |
| 84 | Queen, *Danaus gilippus berenice* (Cramer, 1779) | Possibly purple milkweed, *Asclepias purpurascens* Linnaeus | Peale possibly collected the figured specimens in the Florida Keys during the winter of 1824-1825. This subspecies is found in the southeastern United States, Bahamas, Cuba, and the Cayman Islands. Other subspecies of *D. gilippus* occur on other West Indian islands, and from the southwestern United States southward to Brazil. The larva and pupa are based on figures drawn by John Abbot in Georgia, as published on Plate 39 of Boisduval & Le Conte (1829-[1837]). |
| 85 | Adults: Soldier, *Danaus eresimus tethys* W. Forbes, [1944]; Early stages: *Danaus e. eresimus* (Cramer, 1777) | | The figured male was collected in Cuba. Peale copied the figures of the larva and pupa (reportedly from Suriname) from Plate 6 of Stoll (1787-1790). |
| 86 | Top: Zebra Longwing, *Heliconius charithonia ramsdeni* W. Comstock & F. Brown, 1950; Bottom: Sapho longwing, *Heliconius sapho* (Drury, 1782) ssp. | | The depicted subspecies of *H. charithonia* occurs in Cuba. *Heliconius sapho* is distributed from Mexico to South America. |
| 87 | Figs. 1-2: Probably Cuban Clearwing, *Greta cubana* (Herrich-Schäffer, 1862); Figs. 3-4: Klug's Clearwing, *Dircenna klugii* (Geyer, 1837) | Golden columbine, *Aquilegia chrysantha* A. Gray | *Dircenna klugii* occurs from the southwestern United States to Central America. Peale noted that the plant, which he identified, "is not given as the food plant of the caterpillar . . . ." |
| 88 | Adults: Gulf Fritillary, *Agraulis vanillae incarnata* (N. Riley, 1926); Early stages: Gulf Fritillary, *Agraulis vanillae nigrior* Michener, 1942 | Passionflower, *Passiflora* Linnaeus sp. | The figured butterflies most closely resemble the subspecies *A. v. incarnata*, but Peale mentions early stages from the southern United States, which are applicable to *A. v. nigrior*. This illustration was figured by Foutch (2011). |
| 89 | Figs. 1-2: Julia Heliconian, *Dryas iulia* (Fabricius, 1775) ssp.; Figs. 3-4: Mexican Silverspot, *Dione moneta poeyii* Butler, 1873 | | The figured specimen of *D. m. poeyii* was collected by John Millington at Guanajuato, Mexico, and given to Peale in 1835. Peale's collection at ANSP contains two specimens of this species, both collected by Millington, though neither closely match the figured male. This subspecies is distributed from the southwestern United States to Central America. |
| 90 | False Fritillary, *Anetia pantheratus clarescens* (A. Hall, 1925) | | The figured specimen was collected in Cuba, where this subspecies is restricted. |
| 91 | Mexican Fritillary, *Euptoieta hegesia meridiania* Stichel, 1938; Variegated Fritillary, *Euptoieta claudia* (Cramer, 1775) | | Incomplete graphite sketches. A specimen of *E. h. meridiania* in Peale's collection at ANSP (box 28, no. 19), collected at Guanajuato, Mexico, by John Millington and given to Peale in 1835, likely served as the model for one of the sketches. This subspecies is found from southern Texas to Argentina. The name used by Peale, *Euptoieta mexicana*, does not apply to any known species in this genus. The small slip of paper figured at the bottom of the page refers to Glover (1856), who listed and figured the larva of *E. claudia* under the name "*Argynnis columbina*" (=*Papilio columbina* Fabricius, 1793), a junior synonym of the name *Papilio hegesia* Cramer 1779. |
| 92 | Regal Fritillary, *Speyeria i. idalia* (Drury, 1773) | Plant unidentifiable. | A male specimen of this species, collected in 1831 in the vicinity of Philadelphia (box 37, no. 2), is a close match to the figured male. The early stages were derived from an earlier drawing by Peale, which is reproduced on pg. 245 (bottom row, far left). The larvae were probably those found by Peale in New Jersey in 1833. |

Table 1 (cont.)

| Page no. | Insect species | Plant species | Notes |
|---|---|---|---|
| 93 | Diana Fritillary, *Speyeria diana* (Cramer, 1777) | Plant unidentifiable | Peale borrowed the figured specimens from F. H. Herman Strecker in September 1876 ("I was at work on them an hour after their arrival... They will make a beautiful plate"; letter to Strecker dated 23.ix.1876, FMNH). The name "Great Smokies Fritillary" as used in the published caption, is not generally used for this popular species. Despite the comment that this species has "become quite rare," it is still locally common. Perhaps this statement was meant for *S. idalia* (see drawing on pg. 92), which is virtually extinct east of the Mississippi River. |
| 94 | Great Spangled Fritillary, *Speyeria cybele cybele* (Fabricius, 1775). | | |
| 95 | Probably Variable Checkerspot, *Euphydryas c. chalcedona* (Doubleday, [1847]) or Snowberry Checkerspot, *Euphydryas colon* (W. H. Edwards, 1881) | | Peale proposed the name "*Melitaea latercolor*" for this species in 1833, but did not publish it. Peale's collection at ANSP (box 15, no. 15) contains a specimen of *Euphydryas editha* (Boisduval, 1852) from "Oregon" (Washington), received from Charles Pickering (presumably collected in 1841), which is identified as "*Melitaea latercolor*," thus he obviously confused these similar species. *Euphydryas colon* occurs in Oregon and southwestern Washington. Peale previously included these figures on an unpublished lithograph for *Lepidoptera Americana*, printed in 1836 (ANSP). |
| 96 | Crimson Patch, *Chlosyne j. janais* (Drury, 1782) | | The figured specimen, collected near Mexico City by Baron Gerolt and given to Peale in 1851, resides in Peale's collection at ANSP (box 16, no. 21). The depicted nominotypical subspecies occurs from Texas to Colombia. Peale obviously intended to include an unknown species of *Eurema* Hübner [1819], which he dubbed "*paulus*." No species of Pieridae is currently known by this name. |
| 97 | Eastern Comma, *Polygonia comma* (T. Harris, 1841) | Stinging nettle, *Urtica dioica* Linnaeus | The name used by Peale, *c-album*, refers to the similar European species *Polygonia c-album* (Linnaeus, 1758), which was used for *P. comma* until this species was described in 1841. The figured males were reared from larvae that Peale found in 1875 near Holmesburg (Philadelphia), Pennsylvania. |
| 98 | Mourning Cloak, *Nymphalis a. antiopa* (Linnaeus, 1758) | Willow, *Salix* Linnaeus sp. | Peale implied that the figured individuals were from Pennsylvania. This species occurs from Alaska southward to central Mexico, and is native to Eurasia, though not all these populations are applicable to the nominotypical subspecies as portrayed. |
| 100 | Red Admiral, *Vanessa atalanta rubria* (Fruhstorfer, 1909) | Stinging nettle, *Urtica dioica* Linnaeus | The nominotypical subspecies occurs in Europe, Eurasia, and northern Africa. |
| 101 | Painted Lady, *Vanessa cardui* (Linnaeus, 1758) | Probably bull thistle, *Cirsium vulgare* (Savi) Tenore. | |
| 102 | American Lady, *Vanessa virginiensis* (Drury, 1773) | Sweet everlasting, *Pseudognaphalium obtusifolium* (Linneaus) Hilliard & B.L. Burtt | It is stated in the published caption that the red ventral coloration is exaggerated, but these markings vary from orange, to pink, to red, and can be quite vivid on fresh specimens. This illustration was figured by Poesch (1961). |
| 103 | Common Buckeye, *Junonia c. coenia* Hübner, [1822] | Canada toadflax, *Nuttallanthus canadensis* (Linnaus) D.A. Sutton | The depicted nominotypical subspecies occurs in the eastern United States and Cuba. |
| 104 | Top: White Peacock, *Anartia jatrophae guantanamo* Monroe, 1942; Bottom: Cuban Peacock, *Anartia chrysopelea* Hübner, [1831] | | The figured specimen of *A. j. guantanamo* was collected by Ramón de la Sagra near Havana, Cuba. This subspecies occurs in Florida, the Bahamas, Cuba, and the Turks & Caicos. The figured specimen of *A. chrysopelea* was taken near Havana, Cuba. The name used by Peale refers to a closely related species that occurs on Hispaniola, *Anartia lytrea* (Godart, 1819). |
| 105 | Top: Banded Peacock, *Anartia fatima fatima* (Fabricius, 1793); Bottom: Red Peacock, *Anartia amathea amathea* (Linnaeus, 1758) | Plant unknown (imaginary?) | *Anartia fatima* occurs southward into South America. *Anartia a. amathea* is found from Central America to Argentina, and in the Lesser Antilles. |

Table 1 (cont.)

| Page no. | Insect species | Plant species | Notes |
|---|---|---|---|
| 106 | Top: Florida Purplewing, *Eunica tatila tatilista* (Kaye, 1926); Bottom: Dingy Purplewing, *Eunica monima* (Stoll, 1872) | Plant unidentifiable | The figured specimens of *E. t. tatilista* were collected in Cuba. This subspecies occurs in southern Florida and the Greater Antilles. *Eunica monima* is distributed from the southern United States southward to Venezuela, including the Greater Antilles. The names used by Peale apply to similar South American species: *Myscelia lyperipte* is a junior synonym of *Eunica culvierii* Hubner [1823] and *M. orphyse* refers to *Eunica orphise* (Cramer, 1775). |
| 107 | Dirce Beauty, *Colobura dirce wolcotti* Comstock, 1942 | | The depicted subspecies occurs in the Greater Antilles. The sketches of larva and pupa below the illustration on pg. 112 were likely intended for this drawing. Peale copied those figures from Plate 2 (figs. 3.A and 3.B) of Stoll (1787-1790), which portray the early stages of *Colobura annulata* Willmott, Constantino & J. Hall, 2001 from Suriname (Gernaat et al. 2012). Peale characterized the early stages and mentioned Stoll in his text for *C. dirce*. |
| 108 | Top: White-rayed Checkerspot, *Chlosyne ehrenbergii* (Geyer, [1833]); Bottom (figs. 1, 3): Caribbean Banner, *Lucinia sida sida* (Hübner, [1823]); Bottom (fig. 2): Caribbean Banner, *Lucinia sida torrebia* (Ménétrés, 1832) | | The figured specimen of *C. ehrenbergii*, collected at Guanajuato, Mexico, by John Millington and given to Peale in 1835, resides in Peale's collection at ANSP (box 26, no. 6). Two subspecies of *L. sida* appear to be portrayed: the nominotypical subspecies occurs in Cuba, while *L. s. torrebia* is found on Hispaniola. The name used by Peale applies to a related Jamaican species, *Lucinia cadma* (Drury, 1773). Peale evidently also intended to figure a species identified as *Eubagis dyonis* (=*Dynamine dyonis* Geyer, 1837) from a specimen that he collected in "N[ew] Grenada" (Colombia) in 1831 or 1832, but that species (as currently recognized) does not occur in South America. |
| 109 | Figs. 1-2: Many-banded Daggerwing, *Marpesia chiron* (Fabricius, 1775); Bottom: Antillian Daggerwing, *Marpesia e. eleuchea* Hübner, 1818 | | The depicted subspecies *M. e. eleuchea* occurs in the Greater Antilles. |
| 110 | Viceroy, *Limenitis a. archippus* (Cramer, 1775) | Willow, *Salix* Linnaeus sp. | This is the predominant subspecies in eastern North America. A female in Peale's collection at ANSP (box 84, specimen 11), collected at Holmesburg (Philadelphia), Pennsylvania, during September 1875, likely served as the model for these figures. The name used by Peale, *Limenitis disippus*, is an amended form of the name *disippe* Godart, 1824 (*Nymphalis*), which is a junior synonym of the name *archippus* (*Papilio*). |
| 112 | Adults: Malachite, *Siproeta stelenes biplagiata* (Fruhstorfer, 1907); Early stages: New Beauty, *Colobura annulata* Willmott, Constantino & J. Hall, 2001 | | The figured adult specimen was collected in Cuba. Peale copied the penciled images of the larva and pupa at the bottom of the page from Plate 2 (figs. 3.A and 3.B) of Stoll (1787-1790), which portray the early stages of *C. annulata* from Suriname (Gernaat et al. 2012). This sketch was intended for the illustration on pg. 107, which portrays *Colobura dirce wolcotti*. |
| 113 | Red-spotted Purple, *Limenitis arthemis astyanax* (Fabricius, 1775) | *Vaccinium stamineum* Linnaeus | Two specimens (male and female) in Peale's collection at ANSP (box 37, nos. 17, 18), which he collected in the vicinity of Philadelphia, Pennsylvania, in 1831, undoubtedly served as the models for the figures. This drawing borrows elements from an earlier composition of this species by John Abbot, as portrayed on Plate 10 in Smith & Abbot (1797), a publication cited in Peale's text for this drawing (Fig. 4). Peale also stated that the food plant of this species in the southern United States is *V. stamineum*, clearly in reference to Smith & Abbot (1797). However, he modified the leaves to have toothed margins, which is inconsistent with this plant. The figures of the larva and pupa were probably also based on Abbot's figures in Smith & Abbot (1797). |
| 114 | Top: White admiral, *Limenitis a. arthemis* (Drury, 1773); Bottom: Arizona Sister, *Adelpha eulalia* (E. Doubleday, [1848]) | | The figured specimen of *A. eulalia*, collected at Guanajuato, Mexico, by John Millington and given to Peale in 1835, resides in Peale's collection at ANSP (box 27, no. 5). |

Table 1 (cont.)

| Page no. | Insect species | Plant species | Notes |
|---|---|---|---|
| 115 | Top: Iphicleola Sister, *Adelpha iphicleola* (H. Bates, 1864) ssp.; Bottom: Lorquin's Admiral, *Limenitis lorquini* Boisduval, 1852 ssp. | | Peale previously included these figures on an unpublished lithograph for *Lepidoptera Americana*, printed in 1836 (ANSP). Although the published caption states that the figured *L. lorquini* is from California, Peale did not indicate its origin. This species is distributed from British Columbia south to Baja California, and east to Montana and Idaho. |
| 116 | Male: Karwinski's Beauty, *Smyrna karwinskii* Geyer, [1833]; Female: Blomfild's Beauty, *Smyrna b. blomfildia* (Fabricius, 1781) | | The figured male, collected at Guanajuato, Mexico, by John Millington and given to Peale in 1835, resides in Peale's collection at ANSP (box 26, no. 1). Peale's text for this drawing indicates that the figured female of *S. b. blomfildia* is from Porto Algre, Brazil. This subspecies occurs in South America. |
| 117 | Orion Cecropian, *Historis odius odius* (Fabricius, 1775) | | The figured specimen was collected near Havana, Cuba. |
| 118 | Tailed Cecropian, *Historis acheronta semele* (M. Bates, 1939) | | The figured specimens were collected by Ramón de la Sagra near Havana, Cuba. The depicted subspecies occurs in Cuba and on Hispaniola. |
| 119 | Silver Emperor, *Doxocopa laure druryi* (Hübner, [1825]) | Devilwood, *Osmanthus americanus* (Linnaeus) | The depicted subspecies occurs in Cuba. The plant, which is not a host of this butterfly, was copied from Plate 86 of Michaux (1817-1819). |
| 120 | Figs. 1-2: Cuban Leafwing, *Memphis e. echemus* (Doubleday, [1849]); Fig. 3: Hispaniolan Leafwing, *Memphis verticordia* (Hübner, [1831] ); Fig. 4: probably Florida Leafwing, *Anaea t. troglodyta* (Fabricius, 1775); Figs. 5-6: Tropical Leafwing, *Anaea aidea* (Guérin-Méneville, [1844]) | Plant unidentifiable | The figured specimen of *M. echemus* was collected near Havana, Cuba (this species is endemic to Cuba). The specimen of *M. verticordia* was reportedly captured at "San Domingo" (=Hispaniola, where this species is endemic). The nominotypical subspecies of *A. troglodyta* occurs on Hispaniola, but this species is not found in Central America as indicated in the published caption. A female *A. aidea* in Peale's collection at ANSP (box 28, no. 22), collected at Guanajuato, Mexico, by John Millington and given to Peale in 1835, likely served as the model for figures 5 and 6. In the text for this illustration, Peale planned to include a small rendering of the early stages of a related species, *Anaea andria* Scudder 1875, which he traced from figures in Riley (1870). Peale believed this represented the same species as the butterflies shown in figs. 4-6. |
| 121 | Glossy Daggerwing, *Marpesia furcula* (Fabricius, 1793) ssp. | | The name used by Peale, *Paphia iole* [=*Marpesia iole* (Fabricius, 1782)], is a preoccupied name that was previously employed to define populations of this species with a dorsal purple sheen. |
| 122 | Red-striped Leafwing, *Siderone galanthis nemesis* (Illiger, 1801) | Plant unidentifiable | The name used by Peale, *Siderone ide*, is a junior synonym of the name *nemesis* (*Papilio*). The depicted subspecies occurs in Cuba, Puerto Rico, and on Hispaniola. |
| 123 | Little Wood-Satyr, *Megisto c. cymela* (Cramer, 1777) | Probably perennial quaking grass, *Briza media* Linnaeus | The name used by Peale, *Neonympha eurytrus*, is generally considered to be a junior synonym of the name *cymela* (*Papilio*). Peale based the larva and pupa on figures drawn by John Abbot in Georgia, as published on Plate 61 in Boisduval & Le Conte (1829-[1837]). Though not documented, this plant may serve as a host. |
| 124 | Southern Pearly-eye, *Lethe p. portlandia* (Fabricius, 1781) | Giant cane, *Arundinaria gigantea* (Walter) Mulhlenberg | The figured adults are from Alabama. The larva, pupa, and food plant are based on figures drawn by John Abbot in Georgia, as published on Plate 58 of Boisduval & Le Conte (1829-[1837]). Peale admitted that he copied these figures. |
| 126 | Probably Eyed Brown, *Lethe e. eurydice* (Linnaeus, 1763) | Possibly slimstem reedgrass, *Calamagrostis stricta* (Timm) Koeler | The name used by Peale, *Neonympha canthus*, is a junior synonym of the name *eurydice* (*Papilio*). Peale's figures also suggest a similarity with *Lethe a. appalachia* R. Chermock, a species that was not described until 1947. However, the overall appearance agrees with *L. eurydice*. The plant may also suggest *L. eurydice*, as *C. stricta* grows in open wetlands, not forested swamps where *L. appalachia* is found. This grass is not, however, a host of either of these sedge-feeding butterflies. |

Table 1 (cont.)

| Page no. | Insect species | Plant species | Notes |
|---|---|---|---|
| 127 | Adults: Georgia Satyr, *Neonympha areolatus septentrionalis* W. Davis, 1924; Early stages: *Neonympha a. areolatus* (J. E. Smith, 1797) | Indiangrass, *Sorghastrum nutans* (Linnaeus) Nash | The name used by Peale, *Neonympha phocion*, is a preoccupied name that was once used for *N. areolatus*. *Hermeuptychia hermes* (Fabricius, 1775), as mentioned in the published caption, does not occur in the United States as previously believed (Cong & Grishin 2014). Some authors consider *septentrionalis* to represent a subspecies of a recently recognized species, *Neomympha helicta* (Hübner, 1808). The larva and pupa are based on figures drawn by John Abbot in Georgia, as published on Plate 63 of Boisduval & Le Conte (1829-[1837]) and/or the duplicates on Plate 13 of Smith & Abbot (1797). The latter authors portrayed this species in association with *S. nutans*, probably giving Peale the idea to depict this plant as the host. |
| 128 | Gemmed Satyr, *Cyllopsis gemma gemma* (Hübner, [1809]) | Possibly crabgrass, *Digitaria sanguinalis* (Linnaeus) Scopoli | Although it is indicated in the published caption that these figures do not match *C. gemma*, they are recognizable as this very distinctive species. The larva and pupa were based on figures drawn by John Abbot in Georgia, as published on Plate 62 of Boisduval & Le Conte (1829-[1837]). Though not documented, this plant could serve as a host. |
| 129 | Figs. 1-2: Common Alpine, *Erebia epipsodea epipsodea* A. Butler, 1868; Figs. 3-6: Confused Calisto, *Calisto confusa* Lathy, 1899 | | The name used by Peale, *Erebia blandina*, is a junior synonym of the Old World species *Erebia aethiops* (Esper, 1777). The figured female *E. epipsodea*, reportedly collected in 1841 by Charles Pickering near Mt. Rainier in "Washington Territory," probably corresponds to a female from "Oregon" in Peale's collection at ANSP (box 16, no. 19). The name that Peale used for *C. confusa* refers to a similar Cuban species, *Calisto herophile* Hubner, 1823. The specimens of *C. confusa* were from "the island of Santo Domingo" (=Hispaniola, where this species is endemic). |
| 130 | Adults: Common Wood-nymph, *Cercyonis pegala alope* (Fabricius, 1793); Early stages: Common Wood-nymph, *Cercyonis pegala pegala* (Fabricius, 1775) | Possibly Kentucky bluegrass, *Poa pratensis* Linnaeus | The figured adult specimens were captured on the coast of New Jersey. The larva, pupa, and food plant are based on figures drawn by John Abbot in Georgia, as published on Plate 59 of Boisduval & Le Conte (1829-[1837]). These subspecies of *C. pegala* are restricted to the eastern United States, with *C. p. alope* occurring in the northeast and *C. p. pegala* in the southeast. |
| 131 | Figs. 1-2: Common Wood-Nymph, *Cercyonis pegala boopis* (Behr, 1864); Fig. 3: Great Basin Wood-Nymph, *Cercyonis sthenele sineocellata* Austin & J. Emmel, 1998 ; Figs. 4-5: Common Wood-Nymph, *Cercyonis pegala ariane* (Boisduval, 1852) | | The figured female of *C. p. boopis* was reportedly taken in California. A battered specimen of this subspecies in Peale's collection at ANSP (box 16, no. 8), collected by William Rich in California in 1841, probably served as the model for these figures. The figured "male" (female) specimen of *C. s. sineocellata* was collected in 1841 in the "interior of Washington Territory." A female of this taxon in Peale's collection at ANSP (box 16, no. 7), collected by Charles Pickering in the interior of "Oregon" (Washington), likely served as the model for this figure. The figured specimen of *C. p. ariane* was collected by John K. Townsend on the Columbia River (Oregon or Washington in 1835). Peale associated *C. p. boopis* and *C. s. sineocellata* as the male and female of the same species. |
| 132 | Top: Red Satyr, *Megisto rubricata pseudocleophes* L. Miller. 1976; Middle: Jamaican Calisto, *Calisto zangis* (Fabricius, 1775); Bottom: Sugar cane Calisto, *Calisto p. pulchella* Lathy, 1899 | | The figured *M. r. pseudocleophes*, collected at Guanajuato, Mexico, by John Millington and given to Peale in 1835, resides in Peale's collection at ANSP (box 27, no. 23). This specimen is identified as "*Calisto quadralinea*," a name proposed (but not published) by Peale. *Megisto r. pseudocleophes* occurs in central and southern Mexico. The figured *C. zangis* are from Jamaica, where this is species is endemic. |
| 133 | Probably Common Ringlet, *Coenonympha tullia insulana* McDunnough, 1928 | | The name used by Peale, *Coenonympha california* refers to the subspecies *C. tullia california* Westwood, [1851]. Peale noted that specimens of this butterfly were included in his museum, within Case 27 of Oregon and Rocky Mountain species. This figure does not represent *C. t. california* if the specimen was collected in Oregon or the Rocky Mountains. Peale's box containing "*Coenonympha californica*" is missing from his collection at ANSP, but the specimen was most likely collected in Washington in 1841 by Charles Pickering. The subspecies *C. t. insulana* occurs from southwestern British Columbia to Oregon. Peale previously included these figures on a trial lithograph for Lepidoptera Americana, printed in 1836 (ANSP). On this lithograph, the species was erroneously identified as "*Thecla flavascens*," a name that Peale apparently proposed for a species of Lycaenidae. |

Table 1 (cont.)

| Page no. | Insect species | Plant species | Notes |
|---|---|---|---|
| 134 | Banded Owl-Butterfly, *Caligo atreus dionysos* Fruhstorfer, 1912 | | Unpublished, hand-colored lithograph originally printed for *Lepidoptera Americana* in 1836. This subspecies occurs in Central America. See lithograph on pg. 158. |
| 135 | Atala, *Eumaeus atala* (Poey, 1832) | | Peale's box containing a male *E. atala* is missing from ANSP. This is more of a hairstreak than a "blue" as mentioned in the published caption. Rather than being "quite rare" in southern Florida as stated in the caption, this species is locally common in the southeastern part of the state around landscape plantings of its food plants (*Zamia* Linnaeus spp.). This is the only species of Lycaenidae included among this set of Peale's drawings. |
| 136 | Urania Moth, *Urania boisduvalii* Guérin, 1829 | Cob-nut, *Omphalea triandra* Linnaeus | The figured specimen was collected in Cuba by Felipe Poey. The name used by Peale, *Urania fernandinae*, is a junior synonym of the name *U. boisduvalii*. Peale copied the early stages and plant entirely from a plate that accompanied the original description of *U. fernandinae* by Macleay (1834). This illustration was figured by Foutch (2011). |
| 137 | Urania Swallowtail Moth, *Urania fulgens* Walker, 1854 | Liliaceae sp.? | Peale collected the figured specimen along the Magdalena River in Colombia, probably during August or September 1832. The plant is not a host, but was added to enhance the composition. This illustration was figured by Poesch (1961). |
| 138 | Sloan's Urania, *Urania sloanus* (Cramer, 1776) | | The figured specimen from Peale's collection, labeled "Jamaica West Indies," is deposited at ANSP (it was subsequently remounted). It was acquired in 1877 from F. H. Herman Strecker in exchange for an aberrant specimen of *Papilio troilus* (see drawing on pg. 41). |
| 139 | Silver-spotted Skipper, *Epargyreus c. clarus* (Cramer, 1775) | American wisteria, *Wisteria frutescens* (Linnaeus) Poiret | Interestingly, Peale does not mention *Wisteria* in his notes for this illustration. See drawing on pg. 175. |
| 140 | Wild Indigo Duskywing, *Erynnis baptisiae* (W. Forbes, 1936) | Wild indigo, *Baptisia tinctoria* (Linnaeus) R.Brown | The name used by Peale, *juvenalis*, refers to *Erynnis juvenalis* (Fabricius, 1793), a widespread North American species. This illustration, and the early stages on pgs. 234 and 235, are the earliest known depictions of *E. baptisiae*. |
| 141 | Yucca Giant-Skipper, *Megathymus y. yuccae* (Boisduval & Le Conte, [1837]) | Probably aloe yucca, *Yucca aloifolia* Linnaeus, or mound-lily yucca, *Yucca gloriosa* Linnaeus | The figured specimens were borrowed in November 1877 from F. H. Herman Strecker (letter dated 19.x.1877, FMNH). Based on the life history of this species published by Riley (1876), Peale mentions both *Y. aloifolia* and *Y. gloriosa* in his text for this illustration. Peale planned to include several small illustrations within the text for this species, all of which were traced from figures in Riley (1876). In fact, it was Riley's publication that prompted Peale to illustrate this species. |
| 142 | Cecropia Moth, *Hyalophora cecropia* (Linnaeus, 1758). | | This illustration was figured by Foutch (2011). |
| 143 | Ailanthus Silkmoth, *Samia c. cynthia* (Drury, 1773) | Tree of heaven, *Ailanthus altissima* (Miller) Swingle | Adults that emerged from these cocoons, collected by G. H. Parker on 16 October 1879 at Philadelphia, Pennsylvania, are in Peale's collection at ANSP (box 79, nos. 4, 5) (emerged 12 June 1880). |
| 144 | Figs. 1-3: Grapevine Epimenis Moth, *Psychomorpha epimenis* (Drury, 1782); Figs. 4-6: Eight-spotted Forester Moth, *Alypia octomaculata* (Fabricius, 1775); Bottom: Two-spotted Forester Moth, *Alypiodes bimaculata* (Herrich-Schäffer, 1853) | | A specimen of *P. epimenis* in Peale's collection at ANSP (box 21, no. 18), collected by F. E. Melsheimer in York Co., Pennsylvania, may have served as the model for these figures. Peale captured the figured adult specimen of *A. octomaculata* at Brooklyn, New York. The figured male *A. bimaculata*, captured in Mexico and received from Baron Gerolt in 1846, resides in Peale's collection at ANSP (box 17, no. 6). Peale intended to describe this species as "*Agarista geroltii*" in honor Gerolt. This species occurs from the southwestern United States to southern Mexico. Peale considered these species to represent butterflies, not moths. |
| 145 | Milkweed Tussock Moth, *Euchaetes egle* (Drury, 1773) | Common milkweed, *Asclepias syriaca* Linnaeus | See drawing on pg. 185, which notes that the figured larva was found at Red Bank, New Jersey. |
| 146 | Ornate Bella Moth, *Utetheisa ornatrix* (Linnaeus, 1758) | Probably arrow-head rattlebox, *Crotalaria sagittalis* Linnaeus | The name used by Peale, *Deioeia bella*, is a junior synonym of the name *ornatrix* (*Phalaena*). This illustration is dated 1875 and his notes imply that the figured individuals are from Pennsylvania. His collection at ANSP (box 25) contains many specimens that he collected in 1875 at Holmesburg (Philadelphia), Pennsylvania. |

Table 1 (cont.)

| Page no. | Insect species | Plant species | Notes |
|---|---|---|---|
| 148 | White adults and larva: Unexpected Cycnia Moth, *Cycnia inopinatus* (H. Edwards, 1882); Gray adult: Delicate Cycnia Moth, *Cycnia tenera* (Hübner, 1818) | Milkweed, *Asclepias* Linnaeus sp. | The name used by Peale, *Spilosoma collaris*, refers to a different species, *Cycnia collaris* (Fitch, 1857). The name used in the published caption, *Cycnia antica*, is a junior synonym of the name *tenera* (*Hypercombe*). *Cycnia inopinatus* is found mostly in the eastern United States, while *C. tenera* occurs westward to California and British Columbia. See drawing on pg. 184, which notes that the figured larva was found at Red Bank, New Jersey. |
| 149 | Probably Black-waved Flannel Moth, *Lagoa crispata* (Packard, 1864) | Sweet fern, *Comptonia peregrina* (Linnaeus) Coulter, and *Rubus* Linnaeus sp. | See drawing on pg. 224, which notes that these larvae were found in Red Bank, New Jersey. *Comptonia* is not a documented host of this species, but other species of Myricaceae are fed upon. |
| 150 | Armyworm Moth, *Mythimna unipuncta* (Haworth, 1809) | Timothy, *Phleum pratense* Linnaeus | At least one adult that resulted from the larvae in these drawings resides in Peale's collection at ANSP (box 76, no. 27), collected at Red Bank, New Jersey (emerged 27 June 1880). In his notes for this drawing, Peale identified the grass as timothy. |
| 151 | Pandorus Sphinx Moth, *Eumorpha pandorus* (Hübner, 1821) | Virginia creeper, *Parthenocissus quinquefolia* (Linnaeus) Planchon | The name used by Peale refers to the species *Eumorpha satellitia* (Linnaeus, 1771), which is a Neotropical species. The early stages in this drawing, dated 1880, were derived from Peale's figures on pg. 203, which were rendered in 1833. A pupal exuvia and an adult moth in Peale's collection at ANSP (box 22, nos. 11, 12) are from the same batch of larvae as those portrayed, which produced adults in June 1834. This species is found over much of the eastern United States. |
| 152 | Genista Broom Moth, *Uresiphita reversalis* (Guenée, 1854) | Wild indigo, *Baptisia tinctoria* (Linnaeus) R.Brown | Moths that resulted from larvae portrayed in this drawing, collected at Red Bank, New Jersey, are deposited in Peale's collection at ANSP (box 78, nos. 17-34) (emerged July 1880). This species ranges over much of the United States southward into Mexico and the Greater Antilles. |
| 153 | Imperial Moth, *Eacles imperialis* (Drury, 1773) | Sweetgum, *Liquidambar styraciflua* Linnaeus | The larvae in this composition are derived from Peale's drawings on pgs. 222 and 223. One of these larvae was found in Washington Heights, New York in September 1879. The other was found in late 1833, probably around Philadelphia, Pennsylvania. |
| 154 | Possibly White-marked Tussock Moth, *Orgyia leucostigma* (J. E. Smith, 1797) | | The adults are very poor representations, making their identification difficult. |
| 155 | Major Datana Moth, *Datana major* Grote & Robinson, 1866 | Piedmont staggerbush, *Lyonia mariana* (Linnaeus) D. Don | Hand-colored lithograph, probably created in 1880 (see drawing on pg. 202). The name used by Peale, *Datana ministra*, refers to another species, *Datana ministra* (Drury, 1773). An adult moth in Peale's collection at ANSP (box 22, no. 25), reared in 1833, probably served as the model for the outstretched figure. This species is found over much of the eastern United States. This illustration was figured by [Skinner] (1892). |
| 158 | Banded Owl-Butterfly, *Caligo atreus dionysos* Fruhstorfer, 1912 | | Unpublished lithograph for *Lepidoptera Americana*, printed in 1836. The name used by Peale, *Morpho iris*, is a junior synonym of the name *Morpho atreus* Kollar, 1850. This subspecies occurs in Central America. See lithograph on pg. 134. |
| 159 | Top: Tiger Swallowtail, *Papilio glaucus* Linnaeus, 1758. Middle: Elderberry Borer Beetle, *Desmocerus palliatus* (Forster, 1771) | | Unpublished hand-colored lithograph. |
| 160 | Promethea Moth, *Callosamia promethea* (Drury, 1773) | Sassafras, *Sassifras albidum* (Nuttall) Nees | Published hand-colored lithograph. The plant was derived from Plate 81 of Michaux (1817-1819). Figures from this illustration were copied by J. O. Westwood for Plate 12 of Duncan (1841), which was reproduced for Plate CXVII of Kirby (1897). |
| 162 | Promethea Moth, *Callosamia promethea* (Drury, 1773) | | Published hand-colored lithograph. The dorsal figure and cocoon were copied by J. O. Westwood for Plate 12 of Duncan (1841), which was reproduced for Plate CXVII of Kirby (1897). |

Table 1 (cont.)

| Page no. | Insect species | Plant species | Notes |
|---|---|---|---|
| 163 | Regal Moth, *Citheronia regalis* (Fabricius, 1793) | Black gum, *Nyssa sylvatica* Marshall | Unpublished hand-colored lithograph. The plant was copied from Plate 110 of Michaux (1817-1819). |
| 164 | Io Moth, *Automeris io* (Fabricius, 1775) | Willow, *Salix* Linnaeus sp. | Published hand-colored lithograph. |
| 165 | Monarch, *Danaus p. plexippus* (Linnaeus, 1758) | Swamp milkweed, *Asclepias incarnata* Linnaeus | Published hand-colored lithograph. See drawing on pg. 83. |
| 166 | Sleepy Orange, *Abaeis nicippe* (Cramer, 1779) | American senna, *Senna hebecarpa* (Fernald) Irwin & Barneby | Unpublished hand-colored lithograph. See lithograph on pg. 78. Peale mistakenly applied the wrong name to this plate, calling the species "*Xanthidia Lisa*," which refers to *Pyrisitia lisa* (Boisduval & Le Conte, [1830]). |
| 167 | Large Maple Spanworm Moth, *Prochoerodes lineola* (Goeze, 1781) | Possibly Canada germander, *Teucrium canadense* Linnaeus | Unpublished hand-colored lithograph. See drawing on pg. 182. The name "*Geometra domestica*" used by Peale was of his own making; no such genus or species name is known. Plants of the mint family (Lamiaceae) are not documented hosts of this moth, but it feeds on a wide variety of plants from many families. |
| 168 | Zebra Caterpillar Moth, *Melanchra picta* (Harris, 1841) | American sycamore, *Platanus occidentalis* Linnaeus | Unpublished hand-colored lithograph. See drawing on pg. 187, which notes that the larva was found in 1833 near Kaighn's Point, New Jersey. The name *zebra* as used by Peale refers to the appearance of the larva. Peale's collection at ANSP (box 8, no. 3) contains the adult that was reared from the larva portrayed in this drawing (emerged 2 September 1833). His collection also contains two pupal exuviae that resulted from larva reared at that time (box 8, no. 2; box 20, no. 25), including one wrapped in a sycamore leaf, as depicted at the bottom of this illustration. Although sycamore does not appear to be a previously documented food plant, this evidence suggests that it indeed serves as a host. |
| 170 | Buck Moth, *Hemileuca maia* (Drury, 1773) | White oak, *Quercus alba* Linnaeus. | |
| 172 | Isabella Tiger Moth, *Pyrrharctia isabella* (J. E. Smith, 1797) | | Peale's notes on this drawing indicate that the larva was found at Philadelphia, Pennsylvania, in February 1833. A cocoon in Peale's collection at ANSP (box 3, no. 17), dated 1833, possibly resulted from this larva. |
| 173 | Probably Variable Oakleaf Caterpillar Moth, *Lochmaeus manteo* Doubleday, 1841 | *Moss* sp. | Peale found the larva on 27 February 1833 "on the wissahicon" (=Wissahickon Creek), a tributary of the Schuylkill River, Philadelphia, Pennsylvania. The larvae were found "at the roots of moss," probably near an actual food plant, which includes various trees and shrubs. |
| 174 | Silver-spotted Skipper, *Epargyreus c. clarus* (Cramer, 1775) | | The name used by Peale, *Eudamus bathyllus*, refers to the species *Thorybes bathyllus* (J. E. Smith, 1797). The figure and description of the larva most closely agree with *E. clarus*, but the head capsule lacks the yellow-orange eye patches of this species. Peale found the larva in August 1877 on "Wild indigo" at Red Bank, New Jersey. The pupa resulted from a larva found in 1832 at Red Bank, New Jersey, and it was included in the composition on pg. 139. Wild indigo is not a documented food plant, but this butterfly is known to feed on a variety of Fabaceae. |
| 175 | Silver-spotted Skipper, *Epargyreus c. clarus* (Cramer, 1775) | American wisteria, *Wisteria frutescens* (Linnaeus) Poiret | See complete composition on pg. 139. |
| 176 | Probably Evergreen Bagworm Moth, *Thyridopteryx ephemeraeformis* (Haworth, 1803) | | Found in 1833 on apricot (*Prunus armeniaca* Linnaeus), probably in Philadelphia, Pennsylvania. See drawing on pg. 177. |
| 177 | Evergreen Bagworm Moth, *Thyridopteryx ephemeraeformis* (Haworth, 1893) | Honeylocust, *Gleditsia triacanthos* (Linnaeus) | The name used by Peale, *Oiketiccus coniferarum*, is a junior synonym of the name *ephemeraeformis* (*Sphinx*). Found in 1833, probably around Philadelphia, Pennsylvania. See drawing on pg. 176. |

Table 1 (cont.)

| Page no. | Insect species | Plant species | Notes |
|---|---|---|---|
| 178 | Corn Earworm Moth, *Helicoverpa zea* (Boddie, 1850) | Corn, *Zea mays* Linnaeus | Found in 1880 at Red Bank, New Jersey. |
| 179 | Unknown moth | Moss and liverwort | Found in 1833 "near the the wissahickon," which is a tributary of the Schuylkill River, Philadelphia, Pennsylvania. It does not resemble a species of lichen moth as suggested in the published caption. |
| 180 | Elder Shoot Borer Moth, *Achatodes zeae* (Harris, 1841) | Cut-leaved elder, *Sambucus nigra var. laciniata* (Linnaeus) Zabel | Found in 1830 at Philadelphia, Pennsylvania. Peale coined the name "*Aegeria ferruginosa*" for this species, and the specimens of *A. zeae* in his collection at ANSP (box 29, nos. 29-31) are identified as such. |
| 181 | Deadwood borer moth, *Scolecocampa liburna* (Geyer, 1837) | | Found "under the Bark of a Pine stump" southwest of Kaighn's Point, New Jersey. |
| 182 | Large Maple Spanworm Moth, *Prochoerodes lineola* (Goeze, 1781) | Possibly Canada germander, *Teucrium canadense* Linnaeus | See lithograph on pg. 167. Found in 1833, probably around Philadelphia, Pennsylvania. Plants of the mint family (Lamiaceae) are not documented hosts of this moth, but it feeds on a wide variety of plants from many families. |
| 183 | Forest Tent Caterpillar Moth, *Malacosoma disstria* Hübner, 1820 | Post oak, *Quercus stellata* Wangenheim | The name used by Peale, *Clisiocampa sylvatica*, is a junior synonym of the name *M. disstria*. Found in 1833. In Peale's collection at ANSP (box 3, no. 3) is a cocoon from 1833, possibly resulting from the larva portrayed in this drawing. Oaks are in the genus *Quercus* Linnaeus, not *Fagus* Linnaeus as indicated in the published caption. |
| 184 | Unexpected Cycnia Moth, *Cycnia inopinatus* (H. Edwards, 1882) | Milkweed, *Asclepias* Linnaeus sp. | Found in 1879 at Red Bank, New Jersey. The name used in the published caption, *Cycnia antica*, is a junior synonym of the name *tenera* (*Hypercombe*). See completed composition, mistakenly combining two different species, on pg. 148. |
| 185 | Milkweed Tussock Moth, *Euchaetes elge* (Drury, 1773) | Common milkweed, *Asclepias syriaca* Linnaeus | Found in 1879 at Red Bank, New Jersey. |
| 186 | Top: Spotted Apatelodes Moth, *Apatelodes torrefacta* (J. E. Smith, 1797); Bottom: Banded Tussock Moth, *Halysidota tessellaris* (J. E. Smith, 1797) | Maple, *Acer* Linnaeus sp., or (more likely) northern red oak, *Quercus rubra* Linnaeus | Found in 1879 at Red Bank, New Jersey. |
| 187 | Zebra Caterpillar Moth, *Melanchra picta* (Harris, 1841) | American sycamore, *Platanus occidentalis* Linnaeus | See completed composition on pg. 168. Found in 1833 near Kaighn's Point, New Jersey. The name used by Peale, *Colocasia zebra*, refers to the appearance of the larva and is not a valid name. Peale's collection at ANSP (box 8, no. 3) contains the adult that was reared from the larva portrayed in this drawing (emerged 2 September 1833). His collection also contains two pupal exuviae that resulted from larva reared at that time (box 8, no. 2; box 20, no. 25), including one wrapped in a sycamore leaf, as depicted at the bottom of this illustration. Although sycamore does not appear to be a previously documented food plant, this evidence suggests that it indeed serves as a host. |
| 188 | Pink-spotted Hawkmoth, *Agrius cingulata* (Fabricius, 1775) | Probably sweet potato, *Ipomoea batatas* (Linnaeus) Lamarck | Found in 1833, probably around Philadelphia, Pennsylvania. |
| 189 | Pink-spotted Hawkmoth, *Agrius cingulata* (Fabricius, 1775) | Purple morning-glory, *Ipomoea purpurea* (Linnaeus) Roth. | |
| 190 | Smeared Dagger Moth, *Acronicta oblinita* (J. E. Smith, 1797) | Common buttonbush, *Cephalanthus occidentalis* Linnaeus. | |
| 191 | Carolina Sphinx Moth, *Manduca sexta* (Linnaeus, 1763) | Irish Potato, *Solanum tuberosum* Linnaeus | The name used by Peale, *Sphinx carolina*, is a junior synonym of the name *S. sexta*. Larva found in 1833, probably around Philadelphia, Pennsylvania. |

Table 1 (cont.)

| Page no. | Insect species | Plant species | Notes |
|---|---|---|---|
| 192 | Greater Black-letter Moth, *Xestia dolosa* Franclemont, 1980 | Cabbage, *Brassica oleracea* Linnaeus | In Peale's collection at ANSP (box 22, no. 1) is the adult that was reared from the larva portrayed in this drawing, which was probably found around Philadelphia, Pennsylvania (emerged 26 August 1833). |
| 193 | Five-Spotted Hawkmoth, *Manduca quinquemaculata* (Haworth, 1803) | Garden tomato, *Solanum lycopersicum* Linnaeus. | |
| 194 | Io Moth, *Automeris io* (Fabricius, 1775) | Wild indigo, *Baptisia tinctoria* (Linnaeus) R.Brown | In Peale's collection at ANSP (box 75, nos. 4-6) are egg shells, cocoons, and an adult that correspond to the larvae mentioned on this drawing, which were found in 1879 at Red Bank, New Jersey. |
| 195 | Luna Moth, *Actias luna* (Linnaeus, 1758) | Hickory, *Carya* Nuttall sp. | Found in 1833, probably around Philadelphia, Pennsylvania. |
| 196 | Unknown moth | Common ragweed, *Ambrosia artemisiifolia* Linnaeus. | |
| 197 | Unknown; no larva shown | Fern sp. | Found in 1877 at Ocean Grove, New Jersey. The cocoon of *Callopistria mollissima* (Guenée, 1852) (the species suggested in the published caption) is typically spun in leaf litter, not on the host as indicated by Peale's drawing and notes. |
| 198 | Red-humped Caterpillar Moth, *Schizura concinna* (J. E. Smith, 1797) | | Found on apple (*Malus domestica* Borkhausen) according to Peale's notes for this drawing. This species is widespread in North America. |
| 199 | Unicorn Caterpillar Moth, *Schizura unicornis* (J. E. Smith, 1797) | Hawthorn, *Crataegus* Linnaeus sp. | |
| 200 | Hummingbird Clearwing Moth, *Hemaris thysbe* (Fabricius, 1775) | Blackhaw, *Viburnum prunifolium* Linnaeus | The name used by Peale, *Sesia pelasgus*, is a junior synonym of the name *thysbe* (*Sesia*). Larvae found in 1833, probably around Philadelphia, Pennsylvania. The red lateral line on the green larva is unusual. |
| 201 | Hog Sphinx, *Darapsa myron* (Cramer, 1780) | Arrowwood, most likely *Viburnum dentatum* Linnaeus or *V. recognitum* Fernald | Found in 1833, probably around of Philadelphia, Pennsylvania. |
| 202 | Piedmont staggerbush, *Lyonia mariana* (Linnaeus) D. Don | | Drawn in 1880, a portion of this illustration was copied for the lithograph on pg. 155. |
| 203 | Pandorus Sphinx Moth, *Eumorpha pandorus* (Hübner, 1821) | Virginia creeper, *Parthenocissus quinquefolia* (Linnaeus) Planchon | See the completed composition on pg. 151. The name used by Peale, *Philampelus satellitia*, refers to the species currently recognized as *Eumorpha satellitia* (Linnaeus, 1771), which is a Neotropical species. A pupal exuvia and an adult of this species in Peale's collection at ANSP (box 22, nos. 11, 12) are from the same batch of larvae as those portrayed, which produced adults in June 1834. |
| 204 | Hog Sphinx, *Darapsa myron* (Cramer, 1780) | River grape, *Vitis riparia* Michaux | Found in 1833, probably around Philadelphia, Pennsylvania. |
| 205 | Moth, possibly a species of Catocalinae | Red maple, *Acer rubrum* Linnaeus | Larva (which died) was found in 1833, probably around Philadelphia, Pennsylvania. |
| 206 | Unknown moth | Wild indigo, *Baptisia tinctoria* (Linnaeus) R.Brown | Found in 1879 at Ocean Grove, New Jersey. |
| 207 | Probably Baltimore Bomolocha Moth, *Hypena baltimoralis* (Guenée) | | Found on maple (*Acer* sp.) in 1833, probably around Philadelphia. Pennsylvania. |
| 208 | Clear Dagger Moth, *Acronicta clarescens* Guenée, 1852 | | The name used by Peale, *Acronycta* [sic] *pruni*, is a junior synonym of the name *A. clarescens*. Found in 1879 on apple (*Malus domestica* Borkhausen) at Red Bank, New Jersey. |
| 209 | Polyphemus Moth, *Antheraea polyphemus* (Cramer, 1776) | Red maple, *Acer rubrum* Linnaeus | A female in Peale's collection at ANSP (box 7, no. 7) resulted from one of the larvae portrayed in this drawing, which were found in 1833, probably around Philadelphia, Pennsylvania (emerged 7 July 1834). |

Table 1 (cont.)

| Page no. | Insect species | Plant species | Notes |
|---|---|---|---|
| 210 | Promethea Moth, *Callosamia promethea* (Drury, 1773) | | Found in 1833 on tuliptree (*Liriodendron tulipifera* Linnaeus), probably around Philadelphia, Pennsylvania. |
| 211 | Mottled Prominent Moth, *Macrurocampa marthesia* (Cramer, [1780]) | Blackjack oak, *Quercus marilandica* Münchhausen | Found in 1833, probably around Philadelphia, Pennsylvania. |
| 212 | Top: Orange-tipped Oakworm Moth, *Anisota senatoria* (J. E. Smith, 1797); Middle: *A. senatoria* (J. E. Smith, 1797) (young larva; unfinished sketch); Bottom: Probably Yellow-necked Caterpillar Moth, *Datana ministra* (Drury, 1773) | Oak, *Quercus* Linnaeus sp. | Larvae found in 1874 and 1879 at Holmesburg, Pennsylvania, and Red Bank, New Jersey. |
| 213 | Top: Orange-tipped Oakworm Moth, *Anisota senatoria* (J. E. Smith, 1797); Bottom: Yellow-necked Caterpillar moth, *Datana ministra* (Drury, 1773) | Scrub oak, *Quercus illicifolia* Wangenheim | Larvae found in 1832, probably at Philadelphia, Pennsylvania, and 1879 at Ocean Gove, New Jersey. |
| 214 | Pine Sawfly, *Neodiprion* Rohwer sp. | Pine, *Pinus* Linnaeus sp. | Found in 1877 at Ocean Beach, New Jersey. |
| 215 | Probably Yellow-necked Caterpillar Moth, *Datana ministra* (Drury, 1773) | Piedmont staggerbush, *Lyonia mariana* (Linnaeus) D. Don | The name used by Peale refers to a different species, *Datana perspicua* Grote & Robinson, 1865. Found in 1833 near Kaighn's Point, New Jersey. The plant is not identifiable on the drawing, but Peale mentions it in his notes. This drawing is also reproduced on pg. 244 (bottom row, far left). |
| 216 | Waved sphinx moth, *Ceratomia undulosa* (Walker, 1856) | Ash, *Fraxinus* Linnaeus sp. | The name used by Peale, *Sphinx cineria*, is a junior synonym of another species, *Sphinx chersis* (Hübner, 1823). Found in 1833, probably around Philadelphia, Pennsylvania. |
| 217 | Waved sphinx moth, *Ceratomia undulosa* (Walker, 1856) | | The crippled moth that resulted from this larva is in Peale's collection at ANSP (box 78, no. 14) (emerged 8/9 June 1834). Found in 1833 on ash (*Fraxinus* Linnaeus sp.) by "Mr. Robins," probably at Philadelphia, Pennsylvania. This figure is also reproduced on pg. 244 (bottom row, second from left). |
| 218 | Pearly Wood-nymph Moth, *Eudryas unio* (Hübner, [1831]) | Probably seedbox, *Ludwigia alternifolia* Linnaeus | The name used by Peale refers to a different species, *Eudryas grata* Fabricius, 1793. Two adult moths in Peale's collection at ANSP (box 22, nos. 9, 10) were probably reared from the same batch of larvae portrayed in this drawing. They were found in 1833 at Woodbury, New Jersey. |
| 219 | Salt Marsh Moth, *Estigmene acrea* (Drury, 1773) | Broadleaf arrowhead, *Sagittaria latifolia* Willdenow | Found in 1833, probably around Philadelphia, Pennsylvania. *Sagittaria* is not a documented host, but this species is known to feed on a wide variety of plants from many families. |
| 220 | Probably Yellow-necked Caterpillar Moth, *Datana ministra* (Drury, 1773) or Spotted Datana Moth, *Datana perspicua* Grote & Robinson, 1865 | | Found in 1879 at Red Bank, New Jersey. |
| 221 | Unknown moth | | Found in 1879 at Red Bank, New Jersey. |
| 222 | Imperial Moth, *Eacles imperialis* (Drury, 1773) | | Found on sweetgum (*Liquidambar styraciflua* Linnaeus) in 1879 at Washington Heights, New York. See completed composition on pg. 153. |
| 223 | Imperial Moth, *Eacles imperialis* (Drury, 1773) | | Found on white oak (*Quercus alba* Linnaeus) in 1833, probably around Philadelphia, Pennsylvania. See completed composition on pg. 153. |
| 224 | Probably Black-waved Flannel Moth, *Lagoa crispata* (Packard, 1864) | Sweet fern, *Comptonia peregrina* (Linnaeus) Coulter, and *Rubus* Linnaeus sp. | Larvae found in 1879 at Red Bank, New Jersey. See drawing on pg. 149. *Comptonia* is not a documented host of this species, but other species of Myricaceae are fed upon. |

Table 1 (cont.)

| Page no. | Insect species | Plant species | Notes |
|---|---|---|---|
| 225 | Crowned Slug Moth, *Isa textula* (Herrich-Schäffer, 1854) | White oak, *Quercus alba* Linnaeus | This illustration is also reproduced on pg. 244 (bottom row, far right). |
| 226 | Hoary Edge Skipper, *Achalarus lyciades* (Geyer, 1832) | Plant unidentifiable | The name used by Peale, *Hesperia lycidas*, is a preoccupied name once used for *A. lyciades*. Found in 1879 at Red Bank, New Jersey. See drawing on pg. 232. |
| 227 | Probably Locust Twig Borer, *Ecdytolopha insiticiana* Zeller, 1875 | Presumably Locust, *Robinia* Linnaeus sp. | Found in 1833 (probably around Philadelphia, Pennsylvania) on "*Robinia viscossissima*," which likely refers to *Robinia viscosa* Ventanat (clammy locust). |
| 228 | Copper Underwing Moth, *Amphipyra pyramidoides* Guenée, 1852 | Rose, *Rosa* Linnaeus sp. | A cocoon and an adult moth in Peale's collection at ANSP (box 22, nos. 34, 35) resulted from the larva portrayed in this drawing, which was found in 1833, probably around Philadelphia, Pennsylvania. |
| 229 | Moth, probably a pyraloid or tortricoid | Presumably wild indigo, *Baptisia tinctoria* (Linnaeus) R.Brown | Peale coined the name "*saltatorius*" for this species. Found on "wild indigo" in 1834, most likely around Philadelphia, Pennsylvania. |
| 230 | Western Furcula Moth, *Furcula occidentalis* (Lintner, 1878) | Presumably willow, *Salix* Linnaeus sp. | The name used by Peale, *Phalaena borealis*, refers to the species *Furcula borealis* (Guérin-Méneville, 1844). Though not evident on the figures, Peale's written description most closely matches *F. occidentalis* in referring to a yellow border around the dark saddle markings. The food plant is also consistent with this species. Found on "willow" in 1879 at Red Bank, New Jersey. |
| 231 | Black Wedge-spot Moth, *Homophoberia apicosa* (Haworth, 1809) | Presumably *Polygonum* Linnaeus sp. | In Peale's collection is the cocoon and adult moth that resulted from this larva (emerged 8 July 1834). Found in 1834 (probably around Philadelphia, Pennsylvania) on "Asmart," which is a name used for *Polygonum* sp. |
| 232 | Common Sootywing, *Pholisora catullus* (Fabriciuis, 1793) | Probably *Amaranthus* Linnaeus sp. | The name used by Peale, *Hesperis lycidas*, is a preoccupied name once used for the species *Achalarus lyciades* (Geyer, 1832). Found in 1879 at Red Bank, New Jersey. Peale identified the food plant as "Tell tale," which refers to a variety of *Coleus* Loureiro. He likely misidentified a species of *Amaranthus* based on its superficial resemblance to *Coleus*. |
| 233 | Leaf Tier Moth, *Pococera* Zeller sp. | Pin oak, *Quercus palustris* Muenchhausen | Found in 1834 north of Kensington, New York. |
| 234 | Probably Wild Indigo Duskywing, *Erynnis baptisiae* (W. Forbes, 1936) | Wild indigo, *Baptisia tinctoria* (Linnaeus) R.Brown | Found in 1879 at Red Bank, New Jersey. The name used by Peale, *Thanaos juvenalis*, refers to *Erynnis juvenalis* (Fabricius, 1793), a widespread North American species. See the drawing on pg. 235, and the completed composition on pg. 140. |
| 235 | Wild Indigo Duskywing, *Erynnis baptisiae* (W. Forbes, 1936) | Wild indigo, *Baptisia tinctoria* (Linnaeus) R.Brown | Found in 1877 at Ocean Grove, New Jersey. The name used by Peale, *Pap. juvenalis*, refers to *Erynnis juvenalis* (Fabricius, 1793), a widespread North American species. See the drawing on pg. 234, and the completed composition on pg. 140. |
| 236 | Probably Sweetheart Underwing Moth, *Catocala amatrix* (Hübner, [1813]) | Poplar, *Populus* Linnaeus sp. | Found in 1844, probably around Washington, D.C., or Philadelphia, Pennsylvania. |
| 237 | White-lined Sphinx Moth, *Hyles lineata* (Fabricius, 1775) | | Found in 1836 on grape (*Vitis* Linnaeus sp.) by Robert E. Griffith, Jr. of Philadelphia, Pennsylvania. In Peale's collection at ANSP (box 22, nos. 13, 14) are the pupal exuvia and adult moth that resulted from this larva (emerged 20 August 1836). |
| 238 | Possibly *Morpho epistrophus* (Fabricius, 1796) | Possibly *Inga* Miller sp. | The name used by Peale, *Morpho Laertes*, is a junior synonym of the name *epistrophus* (*Papilio*). Peale was in Rio de Janeiro with the Wilkes Expedition when he found this larva in December 1838. Peale personally reared this species, thus the plant probably represents a tropical host. A fresh specimen of *M. epistrophus* at ANSP from Peale's collection, labeled "*Laertes*" from Brazil, may be the specimen he reared. |
| 239 | Angle-lined Prominent Moth, *Clostera inclusa* (Hübner, [1831]) | Willow, *Salix* Linnaeus sp. | The name used by Peale, *Phalaena anastomosis*, is a junior synonym of the name *inclusa* (*Ichthyura*). Found in 1879 at Red Bank, New Jersey. |

Table 1 (cont.)

| Page no. | Insect species | Plant species | Notes |
|---|---|---|---|
| 240 | Red Admiral, *Vanessa atalanta rubria* (Fruhstorfer, 1909) | Probably Canada woodnettle, *Laportia canadensis* (Linnaeus) Weddell | Found in 1875 along Pennypack Creek, Holmesburg (Philadelphia), Pennsylvania. |
| 241 | Peppered Moth, *Biston betularia* (Linnaeus, 1758) | Black locust, *Robinia pseudoacacia* Linnaeus | Found in 1880 at Red Bank, New Jersey. |
| 242 | Chokecherry, *Prunus virginiana* Linnaeus | | Found in 1880 at Red Bank, New Jersey. |
| 243 | Impressed Dagger Moth, *Acronicta impressa* Walker, 1856 | Birch, *Betula* Linnaeus sp. | Found in 1880 at Red Bank, New Jersey. |
| 244-245 | Small reproductions of thirty-two illustrations of early stages, six of which are butterflies: *Papilio polyxenes asterius* (Stoll, 1782), *Papilio t. troilus* Linnaeus, 1758, *Erynnis* Schrank sp., *Colias p. philodice* Godart, 1819, *Speyeria i. idalia* (Drury, 1773), and *Pieris r. rapae* (Linnaeus, 1758). Eight of these drawings were incorporated into Peale's later compositions (see drawings on pgs. 39, 40, 66, 75, 92, 215, 217, and 225). | | |

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